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WEB SERVICES
Three Businesses Put It to the Test

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CORPORATE ANGST
How to Heal the Dysfunctional IT Organization

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GM Proves E-Business Matters

The auto giant embraces risk to reverse a decades-long decline

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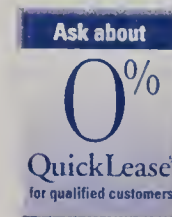
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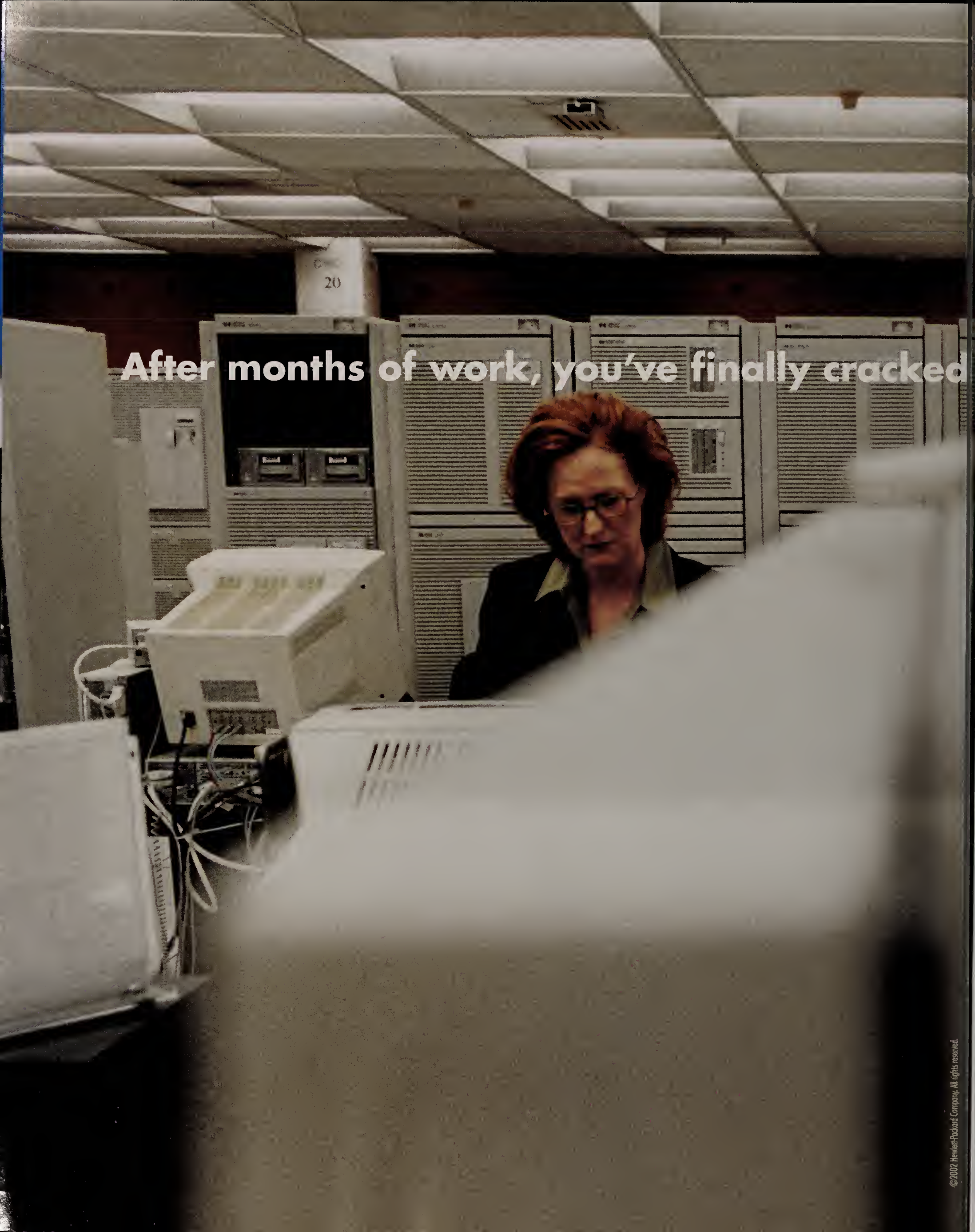
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A woman with short reddish-brown hair and glasses, wearing a dark blazer over a light-colored collared shirt, is looking at a computer monitor. She is in a server room with rows of tall server racks in the background. A white printer is on a desk to her left. The ceiling has a grid of fluorescent light fixtures. The overall tone is professional and focused.

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Cover Story

E-BUSINESS | 50

GM Proves E-Business Matters

Slow and steady no longer wins the race. E-business teaches GM to embrace risk and leave a lumbering legacy behind. *By Derek Slater*

COVER PHOTO BY DAVID BADITOI



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For GM CEO Rick Wagoner, becoming an e-business leader is one of GM's strategic priorities.

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Web Services in the Real World | 58

Web services promises companies that they can exchange data and business capabilities using Internet technologies. Three businesses demonstrate the benefits of starting a Web services project now.

By Susannah Patton



Life Time Fitness CIO Brent Zempel built his company's portal using Web services. Not only has that saved the company time and money, it might also generate revenue: About 80 organizations have asked to buy the system. 58

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Failure to rethink business processes—not technology trouble—grounds most CRM implementations. At Honeywell Aerospace, taking the time to retool business processes is paying off.

By Meredith Levinson

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By Tom Field

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Like individuals, organizations can become depressed, agitated and dysfunctional. Here's how one company that had a problem in authority dynamics fought its way back to health.

By Stephanie Overby

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Grid computing (a new form of distributed computing) is an emerging option in the computing-intensive biotech and pharmaceutical sectors. But despite a lot of buzz—and potential savings on hardware costs—grid-ready applications remain a rare bird. *By Eric Berkman*



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Distributed processing gets an updated look as vendors go for the grid.

By Eric Berkman

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“With all the emphasis on business alignment these days, you’d think there’d be nary an unaligned project proposed anymore. But it still happens.”

—Raghavan Rajaji, CFO for Manugistics, on the IT budgeting process 44

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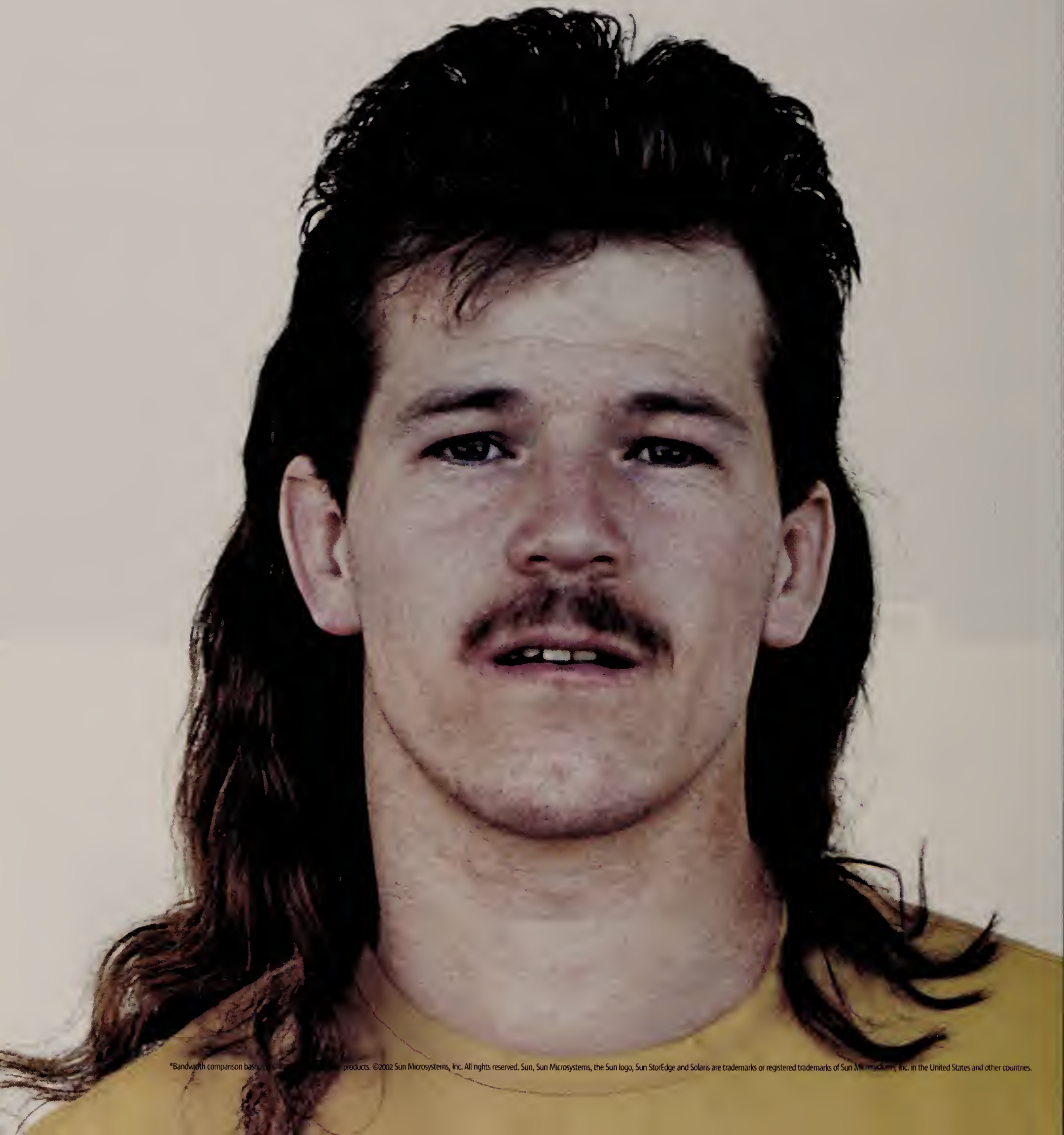
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SUN'S NEW STORAGE OFFERINGS

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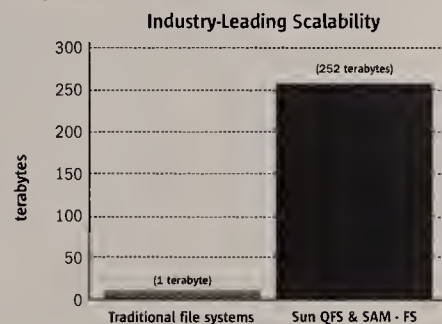
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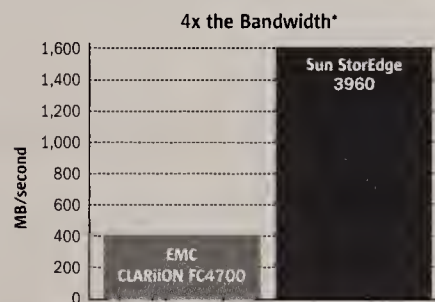
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Visit www.sun.com/sunstorage, or contact your Sun representative.



WEB >CONNECTIONS

ASK THE SOURCE

How do you cure organizational dysfunction?

Things got so bad at Millennium Teleservices that growth slowed and productivity fell (**Corporate Angst**, Page 78). Then the company called in Dr. Christine Truhe, an organizational psychologist. Share your methods and questions on rehabilitating the group with Truhe for the next two weeks on CIO.com.



Dr. Christine Truhe,
organizational psychologist

TALK BACK

How do you know your e-business is a success?

General Motors is using e-business to embrace risk (**GM Shifts Gears**, Page 50). Have you tried to go the e-business route? Share your experiences online.

LEARN MORE

A Q&A with Rick Wagoner, CEO of GM

Derek Slater, author of **GM Shifts Gears**, talks with Rick Wagoner about GM's e-business philosophy and setting goals for e-biz projects.

Find links to these stories and other resources in the Web Connections box at www.cio.com.

Peer Resources The Darwin Connection

CIO's sister publication, *Darwin* magazine (www.darwinmag.com), explains technology for the nontechnology executive. Throughout this issue, Peer Resources boxes point to related *Darwin* stories. Find them at www.cio.com/printlinks.

GM Shifts Gears (Page 50): In *Driver's Ed*, *Darwin* drives home the importance of technology for GM execs.

Power Pool (Page 86): Find the grid concept explained for your coexecutives in *Darwin's* **What Is Grid Computing?**

Web Services in the Real World

(Page 58): Share what your colleagues need to know about Web services in *Darwin's* **Essential Guide to Web Services**.

Darwin's Glossary is a layman's guide to geek speak.

Our Daily Web

MONDAY Tech Tact

Technology Editor Christopher Lindquist covers what's coming.

TUESDAY CIO Radio

Web Writer Danielle Dunne talks with the experts.

WEDNESDAY Metrics

Web Writer Jon Surmacz makes sense of the numbers.

THURSDAY Sound Off

Editors offer up opinions on managerial, political and ethical dilemmas.

FRIDAY 35 Cent Consultant

Executive Editor Derek Slater gives advice worth the price.

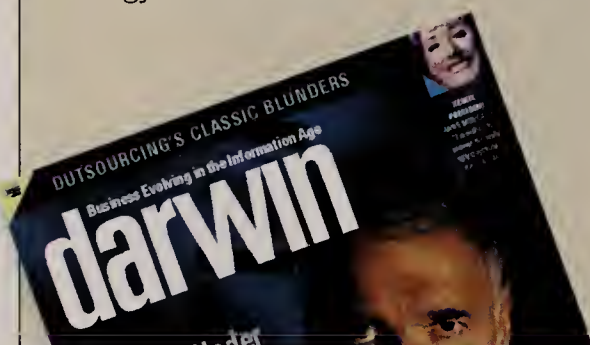


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From the Editor

lundberg@cio.com



For a great article on setting IT priorities in a down economy, read "The Kindest Cuts," from *CIO's* sister publication *Darwin* at www.cio.com/printlinks. And for motivating IT staff during a contraction, see "Managing with Less," also at www.cio.com/printlinks.

Focus

When I think back on the winter of 2001/2002, one thing I'll recall is the sense of a collectively held breath—of people waiting to see what the future will bring. The terrorist attacks of last September were an unprecedented blow. The dotcom crash and its ripple effects provided another. Uncertainty about the future has caused companies to freeze spending on new projects, including IT.

For some CIOs, the effect of all this has been similar to driving down the highway at 70 miles an hour and the engine dies. The car slows, and you gradually drift to the side of the road. People talk about being bored in their job. There's less focus, more room for distraction. And with shrinking resources and opportunities, it's getting harder to develop and motivate the people who make your business run. As one CIO put it, "When the turn-around comes, it's going to be tough to have people ready to jump back in."

These are natural, human responses to uncertainty and hard times. When you're forced into survival mode—imposing austerity measures on everything you do—the logical course of action is to contract back to your core. Risk-taking today is, well, risky. You might do the wrong thing. You might lose money. And so a kind of ennui sets in.

But clearly, at some point, things *will* turn around. When they do, it will be the companies that built today's priorities around the needs of the future that will have the strategic advantage—not those that hunkered down and cut their businesses to the bone.

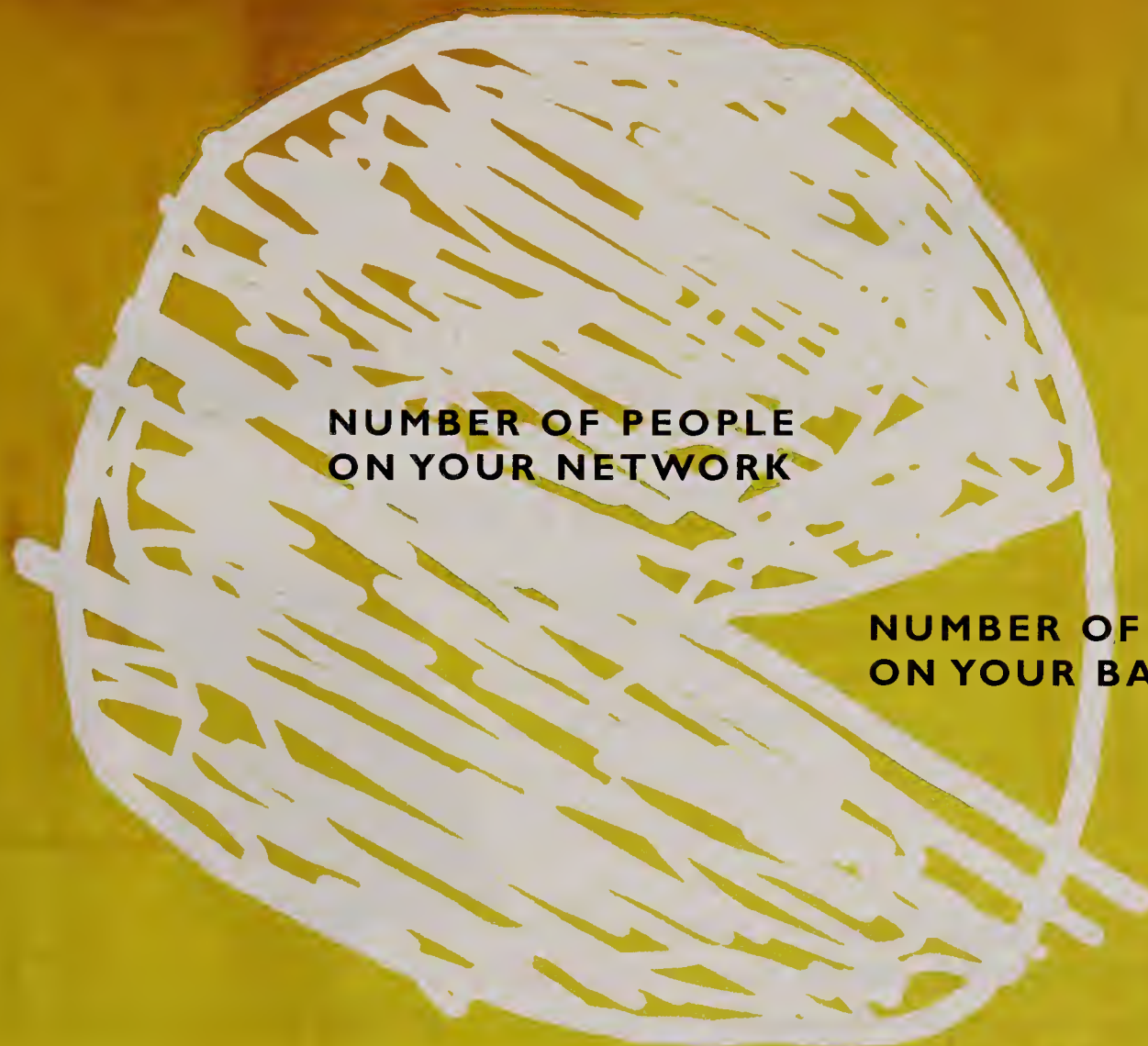
More companies than not have to get by with fewer resources right now—that's a given. But do you really have to do less with less? Not if you're smart about setting priorities and creating a focal point for your company's future.

GM has built its future around four strategic priorities, and e-business is one of them (see "GM Shifts Gears," Page 50). With its "launch and learn" approach, the company takes acceptable risk, runs multiple pilot projects, learns from the experience and pulls the plug when necessary. "In e-business we'd like to be right every time," says CEO Rick Wagoner, "but the cost would be that we'd be slow, expensive and probably last to market. So our philosophy has been, let's get out, take on projects and trials in different places around the world, and see what works."

Is GM just a special case? Is it possible to drive innovation in a stripped down environment? Drop me a line, and I'll share your thoughts with other readers in a future column.

Alkis Lundberg

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Reader Feedback

WOMEN AND I.T.

I believe the age-old problem—women are afraid of mathematics so they will not take classes in it—is the underlying problem for a lack of women in many technical fields, including IT [“Why IT Hates Women (and the Women Who Stay Anyway),” Sept. 15, 2001]. I received my bachelor’s degree in mathematics and a minor in physics in 1970. There were three women in the physics class and only two in math. Even if some women went into the science fields in the ’80s, I bet they lost interest in keeping up with the latest technology and consequently fell out of the field.

The engineers I worked with did not encourage me or treat me as an equal. I have since gotten a certificate in health information management and work with health-care providers where I am treated as an equal in management and as a professional. I may

not get counted as an IT person anymore because I am outside the depart-

unless they sign up for AMC's Movie
 Watcher's Club. In AMC's infinite wis-
 dom, it has decided that
 forcing people to register
 will allow it to gather all
 sorts of new data, track
 spending patterns, ana-
 lyze customer needs—the
 bottom line, of course, is
 to make more money
 from each customer.

The flaw in its logic rests in people like me. I am a graduate student (master's degree in MIS), but I did not register,

will not register and will not return. I will take my student ID, my patronage, and my wife and daughter some place that we're wanted. What could AMC possibly be thinking? While I can see teens and preteens not giving registration a second thought, does AMC think its adult and senior citizen customers will take kindly to this? Or is it that the seniors are such a small part of AMC's business that it doesn't care? Or perhaps it just didn't want to give the discounts anymore but didn't have the courage to simply cancel the discount program? I'm fascinated.

and eagerly waiting to see how this unfolds. In the meantime, there are many other theater chains that will still give me a student discount with no strings attached.

Forcing, or attempting to force, people to give up their privacy is not good customer relationship management.

John McLaughlin

Graduate Student

University of South Florida

Tampa, Fla.

johnsmclaughlin@yahoo.com

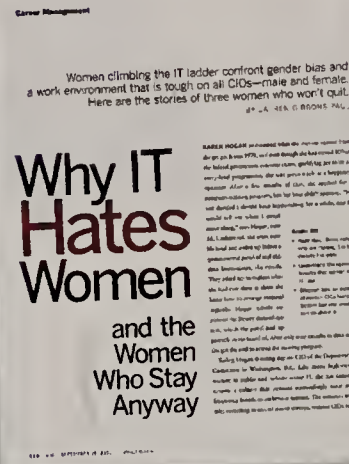
XP SOUND OFF

I read your column ["To XP or Not to XP," Jan. 15, 2002] and was shocked at your statistic of 7.08 hours per year saved on shorter XP boot time alone. I don't know how you calculated that number, but most people I know turn their computer on as soon as they get into their office, and then do the things they would do at the start of their workday, such as taking off their jacket and hanging it up, getting that first cup of coffee, talking to their associates in the immediate area to confirm whether some of yesterday's issues were solved, and so on. And they usually do this in the five minutes prior to the start of their official workday.

In other words, the typical American worker doesn't just sit and stare at his screen when he turns his computer on. He uses that time to accomplish the seemingly trivial, but necessary first tasks of the day.

My theory is that no real time is lost because of existing boot times. Workers have worked around it.

However, if your job is to configure new PCs or reconfigure older ones,



ment, but the IT group consults with me daily. I am charged with the data integrity in our database as well as the billing.

Cheryl-Lee C. Holt

Billing Manager and Data Analyst

Columbia River Mental Health Services

Vancouver, Wash.

cheryl-leeh@crmhhs.org

SPEAKING OF CRM

For a classic lesson in CRM worst practices, look no further than your nearest AMC Cinema. Students and senior citizens can no longer get a discount



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THE CAPACITY TO DO GREAT THINGS.



then most of your day is spent booting and rebooting PCs after software and hardware changes. In that respect, the hours saved would be significantly larger. But I've got to believe the greater ratio of end users would overcome this anomaly.

Rich Gesualdo

I realize that you get advertising revenue from Microsoft, but there are alternatives to the plethora of Windows operating systems, and I am not talking about Linux. MacOS X is Unix based and has a GUI unmatched by any other Unix platform. I am sure Apple's licensing would be better than Microsoft's.

Microsoft support will sunset on a known schedule. What is less known is when the hardware manufacturers will stop supporting older operating systems on new computers. We're an IBM desktop shop with more than 7,000 seats. If someone wanted to use Windows 95 on a new NetFinity desktop there are no drivers available. This became clear about four years ago when we wanted to use Windows 3.11 on new PCs. It just isn't supported and, even if it was, the performance would be terrible.

The driving force for new operating systems is not the technical superiority of the new product from Redmond,

them to support its OEM offering of Linux. That is what it has already done for Windows, and the huge volume of those products makes the incremental cost of supporting each machine relatively small. Linux on the desktop would probably cost much more than the \$50 premium it charged, just to support it.

Microsoft did change its policy, and the extra charges were dropped. However, it's still necessary to buy Upgrade Advantage (now Software Assurance) to back-license an earlier OS on a machine that came with a newer OEM operating system license. So we're faced with the option of using what the manufacturer gives us essentially for free, or we pay a premium to install an older OS that will have worse performance and be harder to support. Not much of a decision, is it?

CIOs can rant all they want about Microsoft forcing them to buy a new OS, but in fact, the blame lies with their hardware vendor. They can rail that they're not going to be forced to upgrade to something new. But the fact is that they're going to have to work very hard and pay a lot extra to keep using their old OS for much longer. Or they're faced with not buying any new hardware for years to come.

These CIOs are pointing the pistol directly at their own foot. They need to think long and hard before they pull the trigger.

Charlie Mohler
Senior Technical Analyst
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The typical American worker doesn't just sit and stare at his screen when he turns his computer on. He uses that time to accomplish the seemingly trivial, but necessary first tasks of the day. My theory is that no real time is lost because of existing boot times.

(Apple's servers come with an unlimited licensed MacOS X server.) Macs cost more, but you get more for your money; they are built better and last longer. Maybe you should interview Avie Tevanian or Steve Jobs. It would make for an interesting read and give your readers some informative and fresh reporting.

James D. Lagnese
Chief Consultant
PowerPC Pro Consulting
jim@powerpcpro.com

I enjoyed your From the Publisher piece; however, you and so many other writers miss out on the most compelling reason to upgrade—support from hardware manufacturers. Sure,

Wash. It is the hardware manufacturer's dropping support for older operating systems in their new offerings. Open-source software isn't the answer either. When Microsoft announced its policy of requiring enterprise operations that use "cloning" tools to buy a second (non-OEM) copy of the OS, I quickly investigated the cost of Linux. IBM is as big a proponent of Linux as anyone so I thought we might be onto something. IBM, at that time, charged \$50 extra for Linux over the cost of NT or '98. So we were as well off paying Microsoft as we were IBM.

It's easy to see IBM's reasoning. Support for Linux would cost it more than support for a Microsoft product. It would have to gather staff and train

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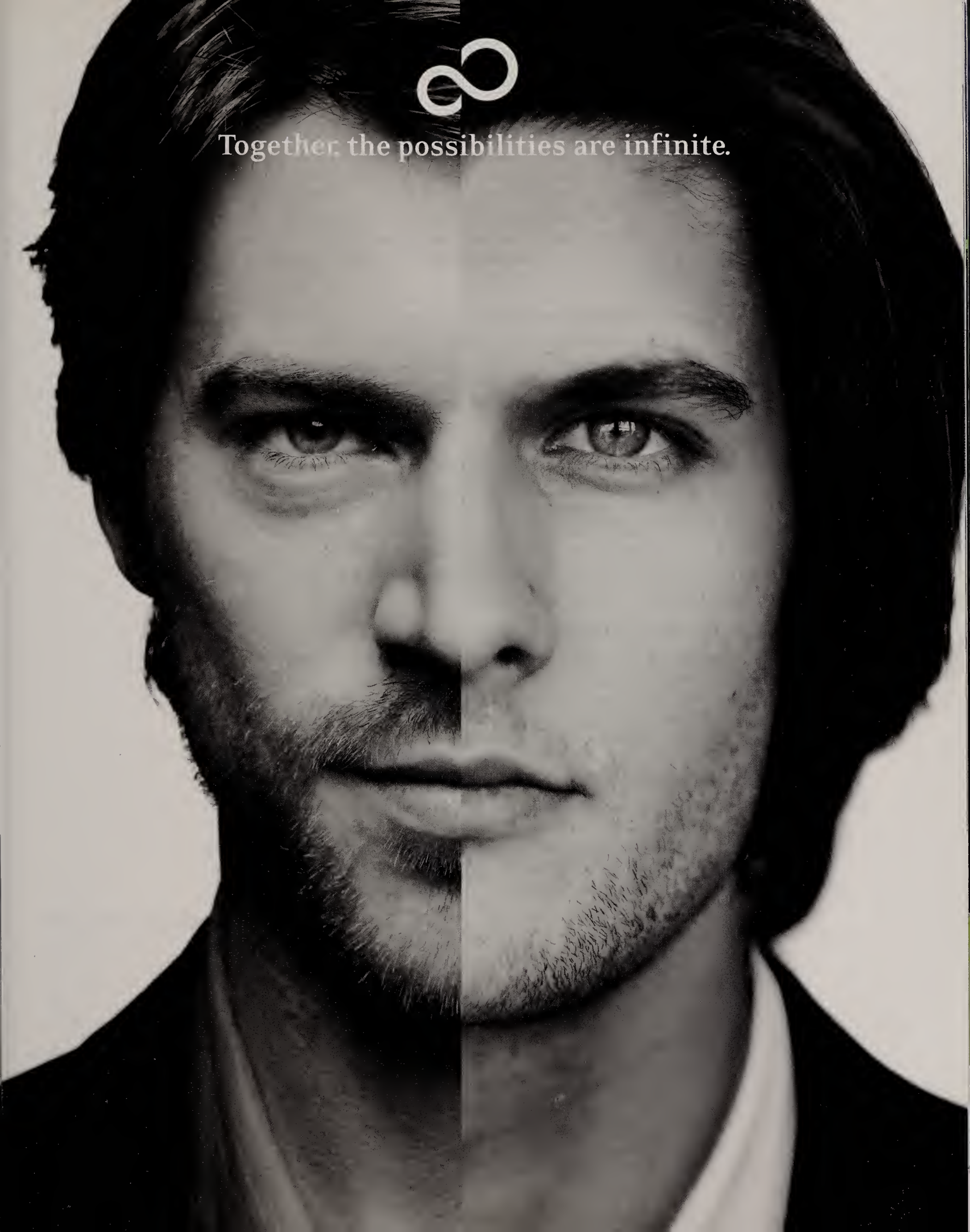
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Edited by Lafe Low

INTERNET TECHNOLOGY

E-Mail Turns 30

By Simone Kaplan

WHEN RAY TOMLINSON merged two computer protocols, he had no idea he was creating what would become a staple of modern communication. "It seemed like a neat idea," says Tomlinson of his now 30-year-old creation. "There was no directive to go forth and invent e-mail."

Tomlinson, then a programmer at Bolt, Beranek & Newman, an engineering company in Cambridge, Mass., was part of a team working on the ARPAnet, the predecessor of the Internet. He had already written a mail program awkwardly named Sndmsg/Readmail that let users write and send messages from one so-called mailbox to another, but a mailbox was just a message file. The recipient could add to but not alter the message's content. Tomlinson had also written an experimental FTP called CYPNET that let users send and receive files over a network connection, so in late 1971, he decided to link the two programs.

At the time, no one knew the extent to which e-mail would redefine business and personal communication. Even when Tomlinson told his coworkers what he had done, they were nonplussed. "No one had a vision of e-mail becoming a motivating



factor for using computers in the future," he says.

When Tomlinson, now a principal scientist at BBN Technologies (the engineering company formerly known as Bolt, Beranek & Newman), a Verizon company, linked the two programs, he was able to send messages between two computers via a network.

He chose the @ symbol to separate the user's name from the host computer name. The rest is history.

Though he's frequently asked how and why he created e-mail, Tomlinson says he has experienced very few negative repercussions outside of the occasional embarrassing question. "Sometimes people want to know why I didn't prevent spam," he says.



KNOWLEDGE MANAGEMENT

Break Down No More

THE COMBINATION OF FIRESTONE tires and Ford Explorers cost the two companies billions of dollars, damaged their reputations and—worst of all—apparently proved fatal. Patterns of tire failure and rollovers started emerging in Firestone's and Ford's war-

ranty claim records years before anyone took notice of the trend, says James Intriligator, subject matter expert in the Innovation Center at Syncata, an El Segundo, Calif.-based software integrator.

A configurable solution developed by Syncata could help detect patterns of part failures before they hurt anyone. Called the Immune System, this group of nine primary software modules tracks and analyzes data—everything from government records to a company's

Continued on Page 30



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CIO PROFILE

Break Down *Continued from Page 28*

proprietary warranty claim information. It then detects patterns that might otherwise go unnoticed.

Unfortunately, most analysis tools can't decipher the handwritten explanatory notes alongside the part, problem and solution codes in claims databases. "A lot of rich information hides in that free text data," Intriligator says. "In it, you'll see things like 'The washer was frayed,' or 'The hose seemed to have dried out and had a bad silicon connection.'" Using text analysis technology from HNC Software combined with neural networking tools, the Immune System ferrets out that critical information.

The Immune System has other applications besides detecting auto part failures and warranty fraud detection. It also works with nearly any manufacturing process, from building aircraft to making toasters, and the potential savings could be significant. "Catching [problems] earlier has all kinds of monetary benefits," Intriligator says. "You don't have to pay for all those repairs, and it's years of bad parts you won't have produced."

—Christopher Lindquist

SUPPLY CHAIN MANAGEMENT

Shine On You Crazy Diamond

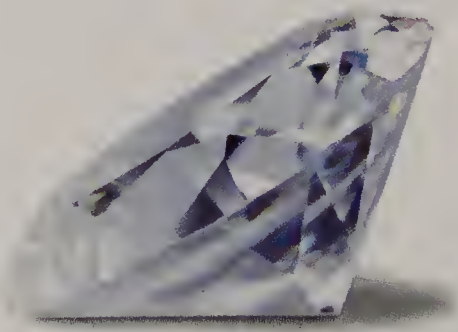
LIKE MANY BEFORE HIM, Steven Passer was lured by the sparkle of diamonds and gold. Although he knew nothing about gems, Passer became CTO of New York City-based jewelry maker Andin International, in part because the company had recently purchased the Web address Jewelry.com. Passer didn't need a jeweler's loupe to know a fine URL when he saw one.

In his new setting, he was charged with building and operating an IT infrastructure that supports business in New York and Los Angeles and a jewelry manufacturing plant in the Dominican Republic. The Dominican plant includes hundreds of computerized weigh stations that ensure workers don't skim the occasional diamond, and a security system that protects a vault containing a veritable mountain of gold bars. However, it was the website launched last November that truly captured Passer's imagination.

The site isn't a direct sales channel for Andin, but rather an elaborate marketing campaign. Jewelry.com has pictures of Andin rings, necklaces and bracelets along with links to popular merchants such as J.C. Penney, Macy's and Zales. The goal isn't to get revenue from consumers, says Passer. Instead, the website provides free advertising for retailers—provided they carry the Andin product being advertised.

If you were selling Andin's version of the ring, you could "get it in front of more eyes," says Passer. "Can you make the leap that you are more likely to sell at least one more?" It appears that retailers can. In its first month alone, Jewelry.com had 1.3 million unique visitors, and orders for Andin products were on the rise.

—Ben Worthen



Carry the Torch

By Stephanie Overby



CHRIS SOUTH, CIO of Blackbaud, a Charleston, S.C.-based software and services company, didn't hurtle down a luge track or tackle a triple axel on the ice. He didn't even make it to Salt Lake City, but he became part of the Olympics when he carried the Olympic flame through downtown

Charleston on its cross-country journey from Atlanta to Salt Lake City.

South ran the torch a quarter mile to the gates of the Citadel on Dec. 6. "The run was so much fun," South remembers. "Hearing the cheers of the crowd and seeing all the people wave gave me chills."

The next day, he brought the torch into the offices of Blackbaud, which provides technology solutions to nonprofits. "Everyone recognized what an honor it was to carry the torch," South says.

Lisa Parker, a former colleague at Atlanta-based DealerGain, a startup where South was the vice president of operations, nominated him to be a torchbearer—an honor bestowed on individuals who have inspired those around them. "Lisa was one of my most trusted employees," says South. "I really believe in giving people opportunities and coaching them on techniques, approach and style to be successful. I coached her on technology, and she coached me on being less analytical."

Other runners who passed the torch with South that day included a pilot who transported blood and extra firefighters to New York City after the terrorist attacks, a pastor who mentored African-American teens in downtown Charleston and a woman who ran a marathon in Hawaii to raise \$10,000 for leukemia research.



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Compiled by Tom Field

Dodd Returns to CIO Role at Kaiser

By Tom Field

CLIFF DODD JOKES that since turning 51, he's developed a sudden interest in health care. That's one reason he took the job as senior vice president and CIO at Kaiser Permanente, the Oakland, Calif.-based HMO.

The truth is that after long stints in the financial services and telecommunications industries—most recently as president and CEO of Westminster, Colo.-based Latis Networks—Dodd wanted to ply his IT skills in an industry that needed them most. “The health-care industry needs a lot of help from the technology perspective,” Dodd says. “I like taking an organization that's behind the curve and bringing it up to speed.”

Dodd inherits Kaiser's 5,000-member IT staff that networked the company's nine-state, 8.1-million-member operations under the guidance of former CIO Tim Sullivan. Among health-care organizations, Kaiser is considered one of the best at collecting and sharing medical data throughout its integrated health-care network.

Nevertheless, Kaiser struggles to manage its data well. The company supports multiple platforms and data centers, and application development isn't as disciplined or efficient as Dodd would prefer. “Health care today is where banking was 20 years ago,” he says. “We have data from 8 million patients—that's incredible. But pulling it all together is the problem.”

Dodd will lead an initiative to move Kaiser to a single information platform, as well as boost personal productivity and introduce a new value-driven software-development delivery discipline within the IT organization.

Looking Back

Dodd spent 13 years at American Express, where he designed and developed the com-



Cliff Dodd

pany's image-based billing system. The years he spent as CIO of telecom companies Ameritech and Qwest Communications earned him a reputation for effective integration and optimization of disparate information systems. Last June, Dodd left Qwest to become president and CEO of Latis Networks, an operating service

provider. As that company struggled in the tech bust, it retrenched, and Dodd resigned earlier this year.

What does Dodd bring to the table now that he has served as CEO? “A broader perspective,” he says. “I can translate better and communicate far more effectively with the sales and marketing guys. I'm more sympathetic and empathetic with them.” He also jokes that when it comes to broader business issues, he now knows “more than enough to be a little dangerous.”

Dodd does have a learning curve in his new industry, but the real challenge, he says, is the same one faced by all new CIOs: building relationships with other business leaders. “This job is just as much about behavior and relationships as it is about the application of technology,” Dodd says. “My challenge is to translate what I know in a value-added way. It's a leadership challenge.”

News of Other Moves

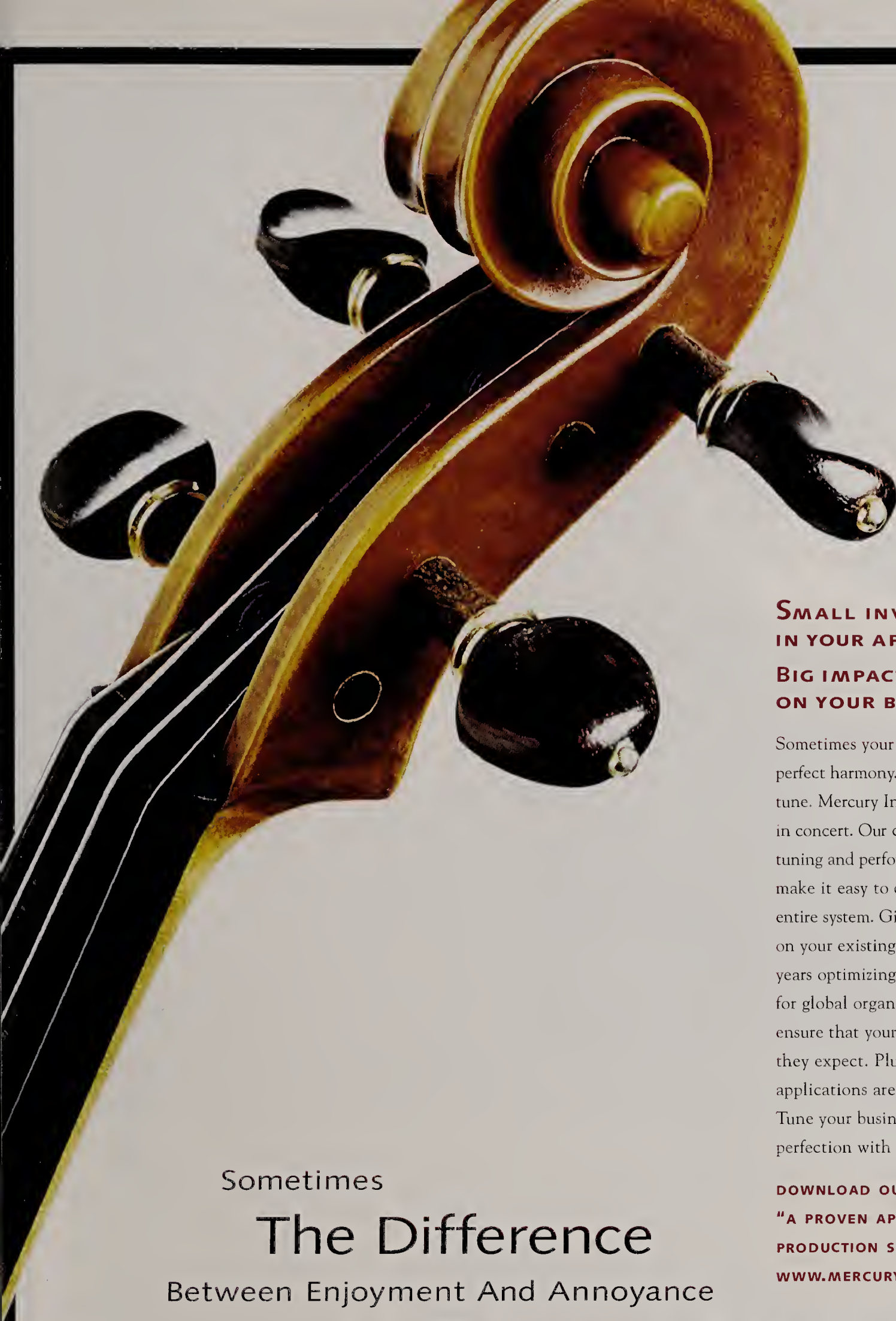
Robert P. DeRodes, former CIO at Delta Air Lines, has been named executive vice president of IT and CIO at The Home Depot. He replaces longtime CIO Ron Griffin, who left the Atlanta-based retail chain at the end of 2001.

Back at Delta Air Lines, **Curtis Robb** has been named acting CIO, replacing DeRodes. Robb, formerly the CTO at Delta subsidiary Delta Technology, will also serve as acting president and CEO of Delta's IT business unit.

Brian Kovacs, former vice president of IT at Walker Information, has been promoted to senior vice president and CIO of the Indianapolis-based research company.

John E. Metzger has been appointed senior vice president and CIO at The Great Atlantic & Pacific Tea Co. (A&P supermarkets), replacing Nicholas L. Ioli Jr., who left the company to pursue other interests. Formerly senior vice president of supply chain and business process initiative at A&P, he will retain that role in his new job.

Douglas P. Neary, formerly a management consultant to Cott Corp., has been hired as vice president and CIO at the Toronto-based soft-drink manufacturer. In this new role, he will be responsible for Cott's IT operations in Canada, the U.K. and the U.S.



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Between Enjoyment And Annoyance

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ORGANIZATIONAL INNOVATION

Two Peninsulas, One IT Office

By Eric Berkman

THE STATE OF MICHIGAN has a long history of innovation—from the Model T and Kellogg's Corn Flakes to Motown and Kid Rock. Now it's also an IT organizational innovator.

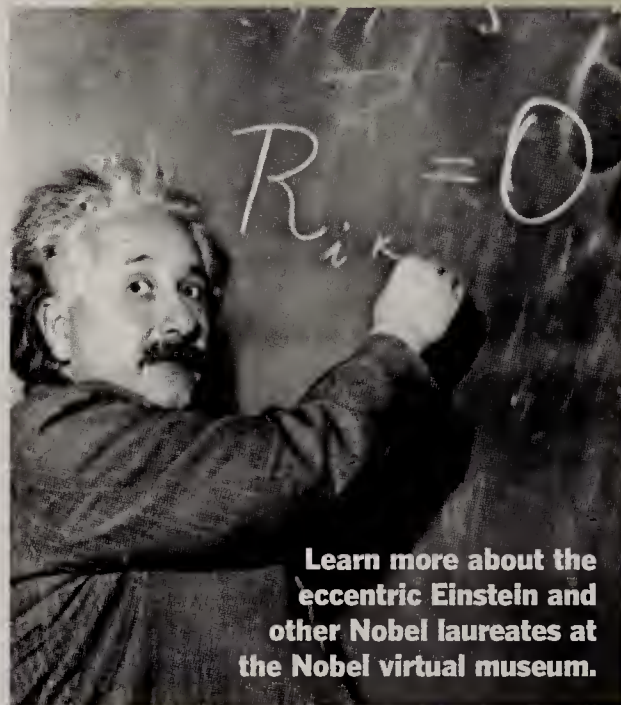
In a move that could become a blueprint for other state governments, Gov. John Engler is centralizing all state IT resources (including approximately 2,000 IT workers) from the individual agencies under a new, cabinet-level Department of Information Technology (DIT). The DIT, headed by new state CIO Jacque Passino, who reports directly to Engler, will handle responsibilities previously handled separately by the agencies, such as vendor management, infrastructure management, user support and application development.

According to the governor, this new system—which evolved from his 2-year-old “e-Michigan” initiative to put state services online—should give the state a better handle on its IT resources, more consistent IT platforms and infrastructure, improved project management and better use of staff. Engler hopes this also leads to better services for the public. “In the traditional, decentralized structure, everyone was in their silos and didn't often realize that maybe what they were doing was closely related to what someone else was already doing or needed to do,” says Engler. “It's scary to think how often people would reinvent the wheel.”

The centralization effort was

announced in August, and Passino was appointed in November, so it's still in the early stages. Passino, who doesn't plan to stay after Engler leaves office on Jan. 1, faces considerable implementation challenges, like resistance from IT staffers reluctant to move out of their agencies, prioritizing projects and consolidating IT

resources. Other states have dabbled in smaller efforts to consolidate IT functions, but none have ever tried anything this comprehensive. “Everyone will be watching with great interest to see how this unfolds,” says Sharon Dawes, director of the Center for Technology in Government at the University of Albany.



Learn more about the eccentric Einstein and other Nobel laureates at the Nobel virtual museum.

WEB STRATEGIES

A Nobel Effort

SWEDISH SCIENTIST ALFRED NOBEL, who made a fortune by inventing dynamite, dictated in his will that the interest from an investment fund would be awarded annually to pioneers in physics, chemistry, physiology or medicine, literature and peace who “shall have conferred the greatest benefit on mankind.” The resulting Nobel Foundation, established in 1900, has since awarded hundreds of prizes, but however great the winners' accomplishments in the sciences and humanities, the honorees' accomplishments often seem somewhat esoteric.

To promote a deeper understanding of the Nobel laureates' work, the foundation has turned

its website (www.nobel.se), first established in 1995, into a virtual museum. The Nobel e-Museum contains animated games, interactive science laboratories, audio clips of acceptance speeches and lectures, laureates' biographies and descriptions of their work.

For example, users can learn how microchips work by playing a game in which they have two minutes to defuse a bomb. Those who have read *Lord of the Flies* by 1983 literature laureate William Golding can test their knowledge of the novel through an interactive quiz. If genomics is your interest, you can practice protein-sequencing techniques in the e-Museum's virtual laboratory.

Nils Ringertz, Stockholm-based director of the Nobel e-Museum, says that the museum promotes advancements in the sciences and humanities. “The Nobel e-Museum is an efficient instrument for providing this information to a worldwide audience, and our hope is that we will be able to promote the interest of the general public in science and culture,” he says.

—Meridith Levinson

“IT'S LIKE BUYING INSURANCE. IF YOU SPEND LESS FOR LESS COVERAGE, YOU DON'T GET AS MUCH BACK IF SOMETHING DOES HAPPEN.”

—Henry Eckstein, CIO of York Claims Service, on backup and disaster recovery spending



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By the Numbers

By Lorraine Cosgrove Ware

ONLINE PROCUREMENT

Streamline Purchasing and Reduce Costs

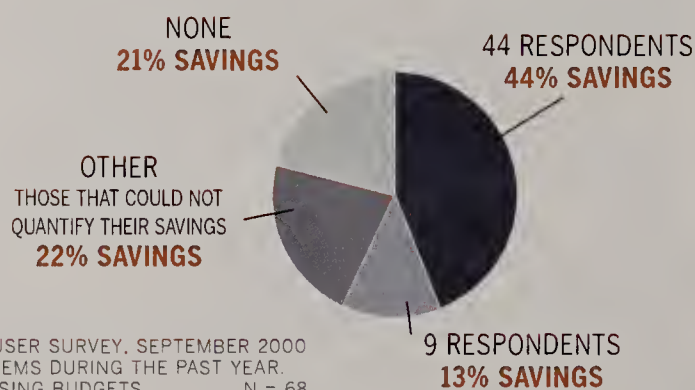
COMPANIES CAN REDUCE their total purchasing budget by up to 8.5 percent by buying online, according to an IDC (a sister company to *CIO*'s publisher) study published in 2001 on e-procurement applications. E-procurement is the use of the

Internet by buyers and sellers to access and exchange large amounts of data for B2B e-commerce transactions.

IDC Analyst Albert Pang says that less than 10 percent of all business procurement today is conducted online.

E-PROCUREMENT SAVES MONEY

According to IDC's survey, 57 percent of respondents saw savings after using e-procurement applications for just a year.

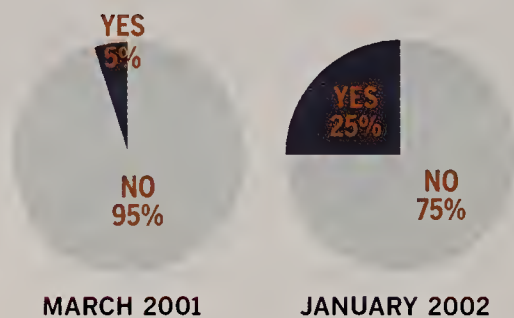


SOURCE: IDC E-PROCUREMENT APPLICATIONS USER SURVEY, SEPTEMBER 2000
SAVINGS GENERATED BY E-PROCUREMENT SYSTEMS DURING THE PAST YEAR.
THE SAVINGS ARE BASED ON OVERALL PURCHASING BUDGETS. N = 68

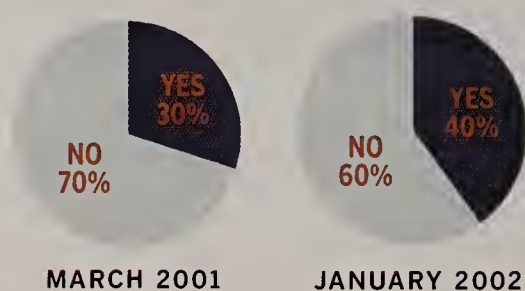
E-PROCUREMENT INSTALLATION IS ON THE RISE

An increasing number of CIOs and CFOs in midsize and large companies have installed e-procurement applications or plan to in the next year and a half.

Have you installed a corporatewide e-procurement application?



If you don't already have a corporatewide e-procurement application, do you plan to install one in the next 12 to 18 months?



SOURCE: ROBERT W. BAIRD & CO. "CIO STUDY," JANUARY 2002

N = 40

ONLINE PROCUREMENT

How Does Your Company Compare?

Profile: **COMPAQ COMPUTER CORP.**

Revenue 2000: **\$42.4 BILLION**

Annual spending on indirect goods and services: **\$6 BILLION**

Number of employees using e-procurement applications: **4,000 WORLDWIDE**

Cost to process a purchase order before e-procurement: **\$167**

Cost to process a purchase order using e-procurement: **\$84**

Percent cost reduction per purchase order: **50 PERCENT**

Best Practices

1. Understand the costs of software. The biggest expense associated with implementing e-procurement is on the software and licenses, which can run between \$100,000 and \$1.5 million, says Pang. Companies that choose to have e-procurement hosted offsite by an ASP can expect to pay between \$10,000 and \$20,000 per month.

2. Use e-procurement for your indirect material purchases. Companies will see expenses drop in the short term more dramatically by purchasing indirect materials and products such as office supplies. Purchasing direct materials has already been automated to some extent by most companies and by EDI and other technologies.

3. Work with an experienced e-procurement supplier and an application that can scale to a large number of users, suppliers and partners. Your vendor should provide an easy process to Web-enable your suppliers as well. "E-procurement technology is still pretty new," says Pang.



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DIGITAL DIVIDE

Role Models on a Roll

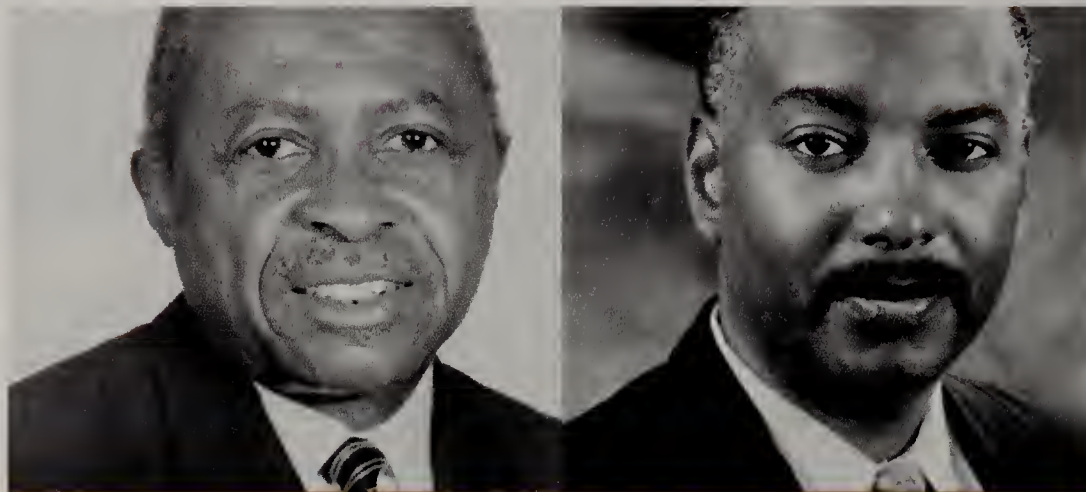
By Michael Goldberg

ROY CLAY SR. is an IT legend. He started programming at McDonnell Aircraft in St. Louis in 1956, just one year after the company told him there were no jobs for "professional Negroes." By 1966, Clay was a leader of the team that designed Hewlett-Packard's first computer system. Today, Clay is CEO of Rod-L Electronics, the electrical product testing equipment manufacturing company he founded in 1975. His company, based in Menlo Park, Calif., is known for providing jobs to local youth.

Clay's success story needs to reach young African-Americans across the

cio.com

To read more about African-Americans in senior IT positions, see **EQUITY?** at www.cio.com/printlinks.



Roy Clay Sr. (left) and Eric Kelly were recently honored as two of the 50 Most Important African-Americans in Technology.

nation, says John William Templeton, president of San Francisco-based Electron Access (publisher of the *Black Student's Internet Guide*). Templeton organized a Jan. 24 ceremony at Howard University's School of Business that honored the 50 Most Important African-Americans in Technology, including Clay; Richard Parsons, slated to be CEO of AOL Time Warner starting in May; FCC Chairman Michael Powell; and Lotus Development CEO Al Zollar. (For the full list of honorees, visit www.blackmoney.com.)

African-American employment in IT-related fields stands at 500,000, Templeton says. He hopes the honorees' stories will encourage that number to double within three years. "IT has become the largest pro-

fession among African-Americans, and yet the perception among people in our own community is that we're not in this field," he says. "We want to change that perspective. It doesn't make sense for 80 percent of these kids to compete for 1,200 athletic jobs."

Another honoree, Eric Kelly, 43, wasn't even born when Clay began his IT career. Now the president of Milpitas, Calif.-based Maxtor Corp.'s network systems group, he makes time in his schedule to urge groups of inner-city high school students to develop IT skills. "My plea to them is to understand the sciences, understand the technology," he says. "I tell them, 'No matter what industry you go into, you still need to understand IT now and to use it.' You can't say 'I don't understand' when you're in a digital economy."

ONLINE COMMUNITY

WAP Powwow

AN ANCIENT MAYA PROPHECY says a day will come when Earth will be covered by a giant spiderweb and a group of 13 will bring all the people together.

Mark Lewis, a member of the Pajaspuypayem tribe, learned about the prophecy only after his 13-member committee set out to develop the No Boundaries project. Through the project, the committee aims to use information technology to link indigenous peoples all over the world. The committee, which is made up of American Indians representing 10 tribes from Mexico, the United States and Canada, was formed in March 1999. In November 1999, the group began working on a Web portal, which offers a communication platform to schools and culture preservation committees, as well as a means for

indigenous peoples to sell goods and services. Members pay a monthly access fee.

The next step was to create a mobile indigenous network through WAP technology to cater to a more widespread audience. Lewis says there are cell phone and PDA users in unexpected places. For example, the Khoisan of South Africa already use CyberTracker, which employs GPS technology to locate animals for tour companies. Software engineers from Israel, Taiwan and Malaysia built the WAP interface for the No Boundaries project, which was ready for rollout in early October. The accompanying website was finished in June. Lewis says there has already been an intense response to his committee's work from indigenous groups all over the world. The Enka, Oroqen and Nanai in the area of Northern Asia, native Tasmanians and Hopi Indians are just a few examples of groups who have taken a strong interest. More than 1,800 communities representing 4 million people and 444 languages have signed on to participate in the network.

—Joe Sullivan

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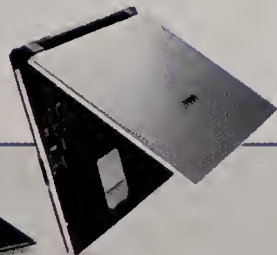
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Total Leadership

Built to Last

In today's fast-changing world, strategies that take years to develop can be dashed in a minute. Here's how to make them endure.

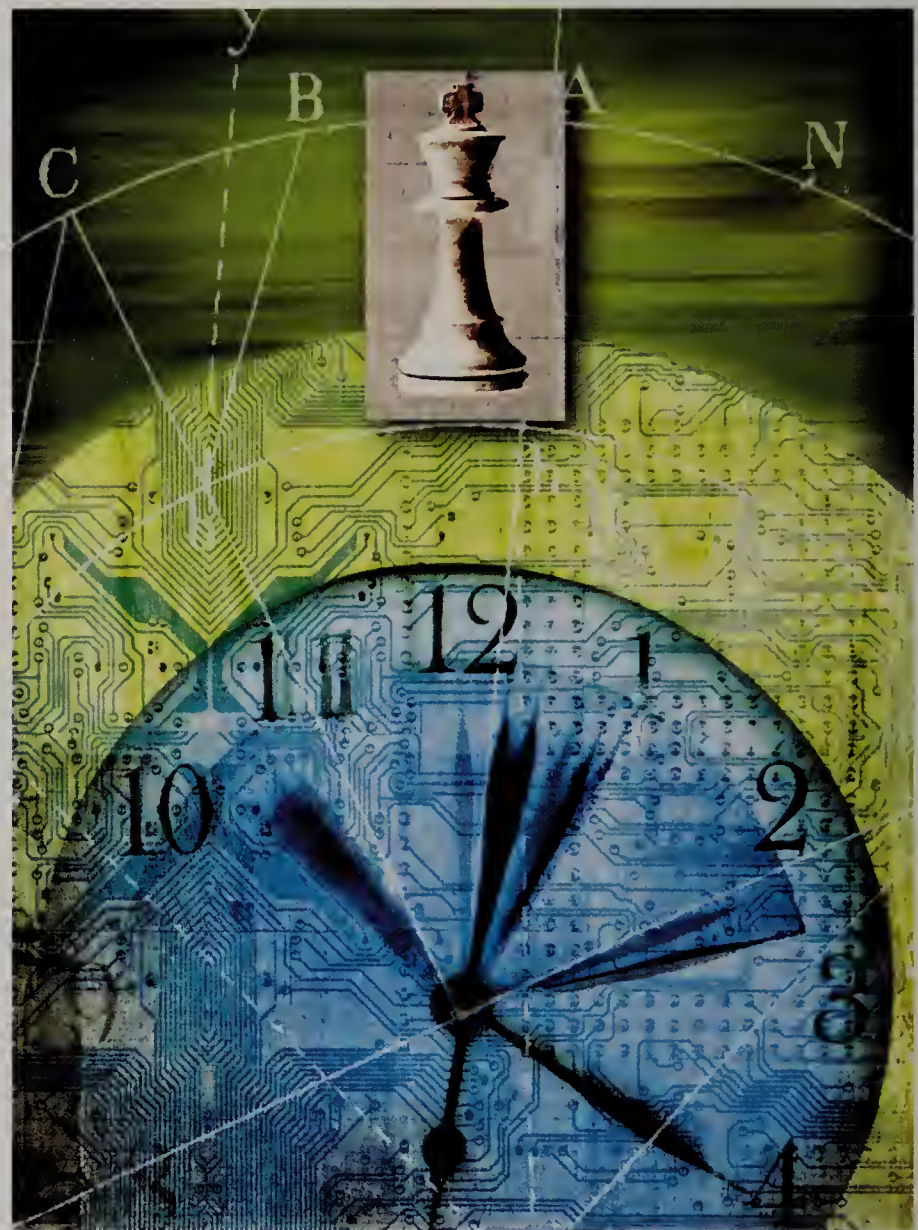
BY PATRICIA WALLINGTON

YOU JUST FINISHED developing the technology strategy for your company. It took months of research and hard thought. But today a headline negated all that effort, revealing new circumstances that make your strategy all but useless. Wouldn't it be nice if strategies took one minute to develop and years to become outdated, instead of the reverse? How can we plan in an environment that is changing as fast as the proverbial speeding bullet?

Lots of things can change in the course of developing a strategy—vendors, technologies, business conditions—but plan we must. As the old saying goes, If you don't know where you're going, any road will do. Organizations need strategies; the trick is to make them as enduring as possible. Here are a few suggestions.

Do It Every Day

Gone are the days when a one-time effort every two or three years produced the desired result. Strategy development and review must be included in your day-to-day management process. Most companies have mastered the ongoing review of strategy execution; now they must internalize the ongoing

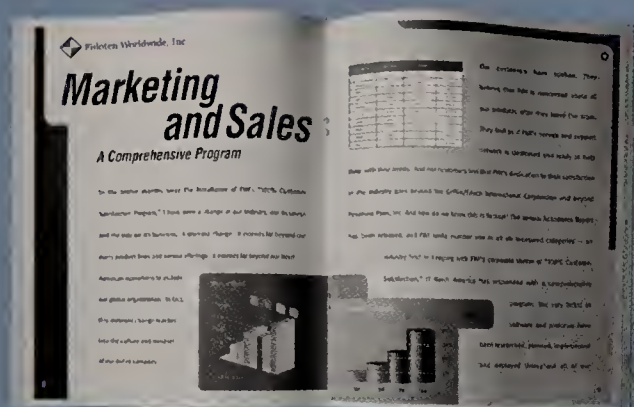


review of the environment, critical assumptions and competitive threats. When these factors vary in significant ways from what was included in your original plan, changes may be in order—if not for the destination, then perhaps for the route you take to get there. This ongoing review will keep your strategy alive, allowing you to transform it to incorporate current realities.

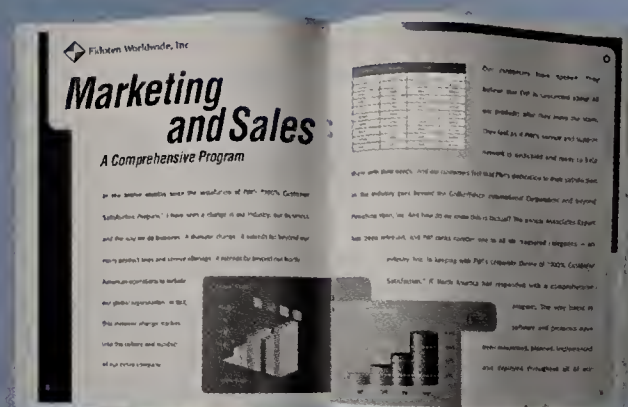
Connect the Dots

How many times have you seen beautifully bound strategy books on an organization's shelves with no evidence of implementation? I call these dust suckers. Any successful strategy must also include plans for communication and execution. In one large company I worked with, there was a never-ending discussion of whether the organization's main strength was strategy or execution. The discussion was usually presaged by

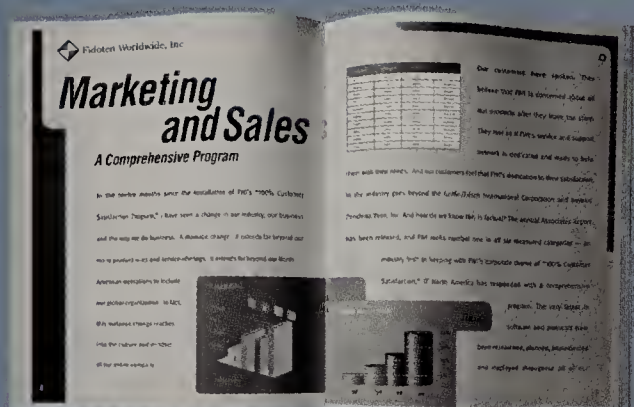
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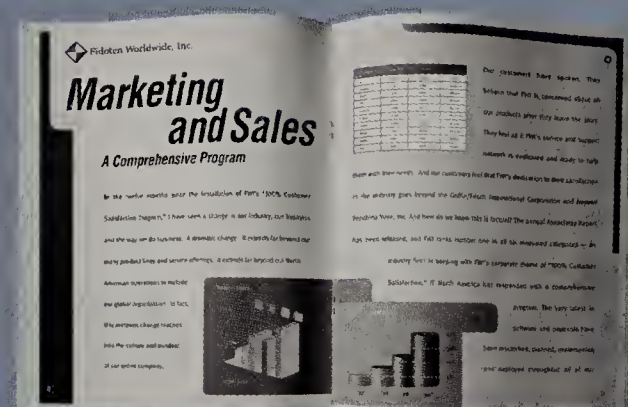
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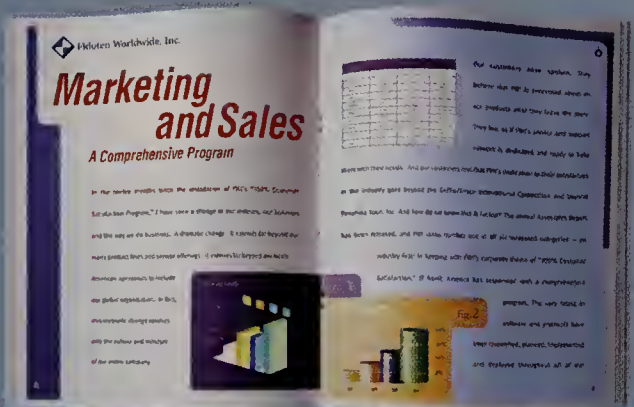
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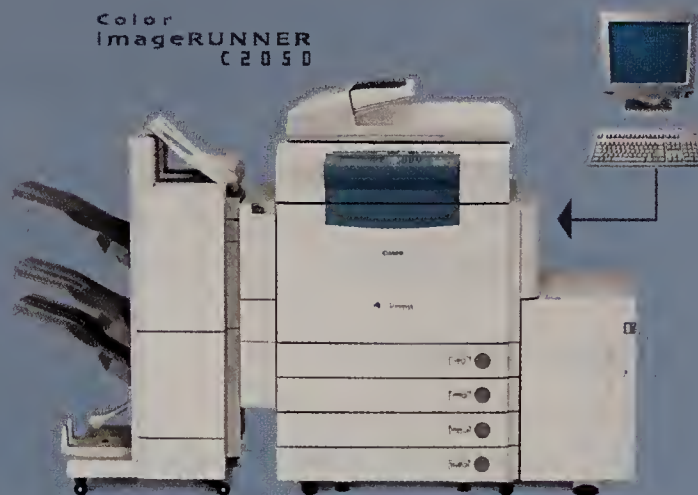
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Total Leadership

some failure to execute. The organization worked diligently at implementing old programs long after a new strategy had been developed. In fact, that company was skilled in both strategy and execution; what was missing was the linkage of the two through effective communication. Don't forget those connections.

Polish the Process

More than at any other time, the process of developing a strategy is as important as the content. Let's just focus on one aspect

Pity the poor company that in the fall of 2001 launched a big promotion for its travel manicure set.

of the process—participation. Have you ever heard the saying, A plan is like a picture of a party; if I'm not in it, I lose interest quickly? Keep this in mind when deciding whom to engage. Whom will you need for execution? Include them in some way. When we were planning the IT strategy at Xerox, I had each of the senior executives spend a day with one of the outsourcing vendors and one of the vendor's key customers. This created a level of knowledge and ownership that ensured their support when implementation issues arose.

Partner with the business strategy planners. They face many of the same challenges you do. Who are the power brokers you will need for support? Find a role for them. Not everyone needs to be actively engaged; just keeping them personally informed may be sufficient to create the stakeholder relationship.

Your leadership will be essential. Even a sound process can fail without the drive, the commitment and the charismatic leader. You are the captain of this ship. Be visibly at the helm.

If It Ain't Broke, Break It

When it comes to content, there are several challenges. If your strategy looks like last year's plan, start over. Tomorrow's challenges are sure to be even greater than today's, so use crazy targets. Try the "What if, I wish, If only, Why not, So what" ways of developing hypotheses and then test them. Develop a range of alternatives with built-in triggers to give you the most flexibility.

Be sure to articulate underlying assumptions such as the expected life of a technology, the strength or weakness of a competitive threat, your core competency, the economic climate for your business and pricing directions.

Test these assumptions with multiple stakeholders. Understand their impact on the strategy.

Be especially sensitive to assumptions about timing. Put them at the top of your list for constant review. Pity the poor company that in the fall of 2001 launched a big promotion for its travel manicure set!

We all know that technology strategy should be based on business strategy. Your company's strategy may not be eloquently documented in a binder, but there almost certainly is one. You may have to talk to a lot of people to gather its key aspects, and that can give you an advantage. It is difficult to get the real sense of a strategy from literature or PowerPoint presentations.

Keep Talking

Communicate frequently to your employees, business leaders and senior executives, not only at the start and finish but throughout the process, and in as many ways as you can. Create themes, symbols, logos and sound bites to aid internalization and adoption. Tell people why as often as what. Tailor the message to the audience.

Don't Go Here...

Now, a few key things to avoid. Please do *not*:

Be complacent. Past success can be a trap that causes you to think future success is assured.

Get stuck. Sometimes pride of authorship warps our good judgment, so we stay glued to an out-of-date strategy. When you find yourself being defensive, stop.

Focus on numbers. Don't be tempted to think everything is OK if you just make the numbers. When the numbers outweigh the text, begin again.

Go for looks. Never assume eloquence will replace substance.

Freeze. Make sure you don't get caught in analysis paralysis.

Follow the leader. Pursuing a strategy because everyone else is doing it ignores the unique aspect of your corporate culture.

Hire it out. Do not ever—*ever*—have a consultant develop your strategy. Enough said.

Let me close with a caution. You may have a great vision, strategy and execution, but if you don't have the hearts and minds of the people, it is all for naught. Please consider your people strategy as an integral part of your technology strategy. Good luck! **CIO**

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Visit our **LEADERSHIP & MANAGEMENT RESEARCH CENTER** at www.cio.com/leadership.

What leadership topics would you like to read more about? Let us know at leadership@cio.com. Before retiring in 1999, Patricia Wallington was corporate vice president and CIO at Xerox. In 1997, Wallington, now president of CIO Associates in Sarasota, Fla., was inducted into the Women in Science and Technology Hall of Fame.



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NATIONAL MARKET ISSUES

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CXO Perspectives

Views from the Executive Suite

How to Get Your Budget Approved

CFOs look for certain things in a good IT budget. Here's what yours should—and shouldn't—include.

BY RAGHAVAN RAJAJI

THE RELATIONSHIP BETWEEN CIO and CFO can sometimes be a tenuous one. Not because of any generalized ill will on either part, and certainly not because of any great difference in overall objectives. Both roles, after all, are working for the success of the corporation. The trick is that CIOs and CFOs need something from each other, but they can't always be certain they'll get it. CIOs need the approval of their CFOs to get funding for IT investments, while CFOs need assurance that those investments will produce real business value for the company.

Naturally, the budget-approval process is where this all comes out. I've worked in the CFO role for almost 20 years, spanning three different corporations. Based on that experience, I can tell you that there are certain things I look for in a good budget, as well as red flags that make me think twice. Let me tell you how to get your budget approved.

Trouble Ahead?

In my opinion, IT budgets are no different from any other kind of budget. In today's business environment, IT is no longer just overhead. It's part and parcel of the business, so technology proj-



ects should be considered and analyzed the way all other business projects are, subject to the same rules and requirements.

That said, there are a few red flags that I look for in any budget, whether it comes from the CIO or the vice president of sales.

Half the story. There are few things more distressing to a CFO than being told up front about only part of the costs involved in a proposed project. The surprise ending comes later, when a bunch more money is suddenly needed to keep things going. For example, it's not unusual to see a budget that includes the software and hardware costs of an IT project but not the additional costs for ongoing maintenance or consultants required to do the implementation. I saw this happen once in the context of a major ERP project. People underestimated the maintenance costs and did not mention them up front. Then, once we were in the thick of it, suddenly it came to light that we needed four additional people to maintain the system. That kind of thing does not make your average CFO happy. In addi-

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tion, it means a loss of credibility for the CIO.

Far from average. Another thing I watch for is a request for a budget increase by some percentage that is dramatically different from the rate at which the overall business is growing. For example, if the company is growing at roughly 30 percent a year and someone requests a 200 percent budget increase, I do a double take. And it works the other way too—a request for just an inflation adjustment when the rest of the business is growing rapidly also makes me wonder. Not that either of those necessarily means there's a problem, mind you—they just makes me want to look more closely.

First and foremost, I want to know that an IT budget has significant support from the business side.

Out of alignment. With all the emphasis on business alignment these days, you'd think there'd be nary an unaligned project proposed anymore. But it still happens. Someone may propose an investment that focuses on a low-priority part of the business, for example. The fact that he's not aware of this priority suggests that he's out of touch with the business.

Not all there. In addition to providing incomplete information about costs, budgets may fail to specify in enough detail considerations such as which organizational goals the proposed project will support and how, exactly, it will support them.

Vague plans. Every once in a while a CIO or other executive will submit a budget that uses some obscure statistic as a rationale for a budget increase. For example, he may have read somewhere that CIOs are expected to increase their spending by 18 percent in the next year, so he requests that same increase for his department without knowing what he'll spend it on. That is not a good plan.

Hungry infrastructure. Finally, when it comes to funding infrastructure, I don't want to see requests for much more than an inflation adjustment—unless, of course, there are major changes in the works.

Smooth Sailing

Now let me tell you about the budget proposal of my dreams. Not only is it free from the potential problems previously listed, but it also includes a couple additional touches that make my heart sing.

A fan club. First and foremost, I want to know that an IT budget has significant support from the business side. In fact, what I really love is to receive e-mails or other unsolicited expressions of support from key people on the business side

telling me that the proposed IT project is critical. The strongest ones add that, if push comes to shove, they'd be willing to pitch in some of their own funds to make it happen. If I get a note like that, most of my hesitation disappears.

A CIO with credibility. I almost hate to say it, but I think I'd be remiss to leave it out: CFOs are human and, as such, we can't help but take into account the credibility of the CIO when we look at an IT budget proposal. If the CIO has a history of submitting budgets plagued by the aforementioned problems, it makes us more likely to look closely at his next budget. (Same goes if he has picked unreliable technology vendors in the past;

that is especially relevant now that so many dotcoms have failed.) If, on the other hand, he has consistent support from the business and his budgets are always detailed and well thought-out, chances are the next one will be too.

In short, if a CIO's budget provides a complete, detailed picture and is

aligned with business goals—as evidenced by support from line management—there's usually little reason for concern. One of the best examples I've seen was a budget for a consolidated systems plan. It clearly supported one of the business's objectives, which was to consolidate all functions; its priorities were well-defined; and it had the support of all the key organizational presidents. It simply left no room for doubt.

Make It Happen

Part of the CIO's task in creating successful IT budget proposals is to make sure the I's are dotted and the T's are crossed. That aspect is simply a matter of taking the time to do it right.

What may not be so straightforward—though definitely no less critical—is making sure that you, your department and your proposed investments are aligned with the business. That depends to some extent on you and your understanding of business priorities, but there can also be factors at work that are beyond your control—namely, the culture of your organization and how much importance it places on IT. Are you treated as an equal by your business peers? Are you invited to play golf with them at the company outing? If not, either you're out of touch with the business or the business doesn't yet realize the strategic value of IT. It's up to you to figure out which of these is the case and then do what needs to be done. **CIO**

What topic would you like to see discussed from the CFO's perspective? Let us know at cxoperspectives@cio.com. Raghavan Rajaji is executive vice president and CFO for Rockville, Md.-based Manugistics, a supply chain management, supplier relationship management, and pricing and revenue optimization software company.



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GM Shifts Gears

Slow and steady no longer wins the race. E-business teaches GM to embrace risk and leave a lumbering legacy behind. BY DEREK SLATER

IN NOVEMBER 2001, the North American sales force for eGM—a group created with much fanfare in 1999 to push e-business projects and processes throughout General Motors—was dismantled and rolled back into GM's traditional business units. Then in February 2002, eGM President Mark Hogan was reassigned to a newly created post in GM's design and development group; what remained of eGM was put under the purview of GM North America President Gary Cowger.

Industry skeptics say the dismantling of eGM is one indication that the automotive giant is retreating from its e-business ambitions, putting aside its dotcom dalliance, and returning to the real world of plastic and rubber and steel. "When they formed eGM, it looked like the Internet was the wave of the future," says Paul Eisenstein, publisher of The Car Connection (www.thecarconnection.com), an automotive industry e-zine. "Every company thought if it got into online retailing it was going to make money." Then the Internet bubble burst. The situation at GM isn't an isolated one, Eisenstein says; other auto companies along with GM are redefining their e-business strategies.

However, GM executives, including CEO Rick Wagoner and CIO Ralph Szygenda, say the changes at eGM are not indicative of a wholesale retreat from e-business. "The intent from the beginning was to create a separate function for two to three years to drive [e-business capabilities] across GM," says Szygenda. Contrary to what critics claim, Wagoner and Szygenda say eGM's dismantling is a sign of success, asserting that e-business has become an integral part of the company's fabric.

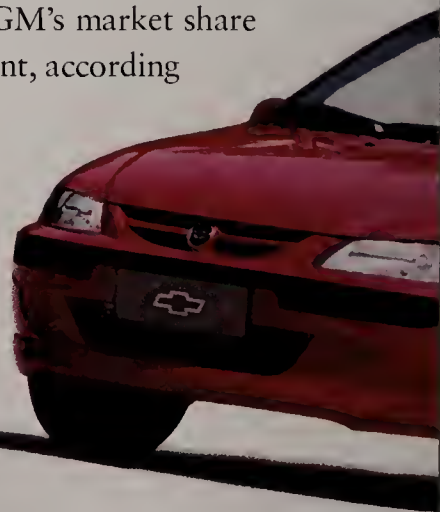
By putting a positive spin on eGM, are Wagoner and Szygenda engaging in a bit of revisionist history? Even if that's the case, it doesn't matter. The dispute over eGM is meaningless, essentially a tempest in the auto industry's largest teapot. Regardless of eGM's fate, GM's e-business initiatives have succeeded in changing how the company makes business decisions.

In Need of an Overhaul Headquartered in Detroit, GM has long needed a change in fortune. Consider this famous fact: GM's share of the U.S. auto market dropped from 50 percent in the

1960s to a low of around 27 percent in 2000. Last year was the first year in a long time that GM's market share rose, however slightly (to 28 percent, according to automotive publisher Wards Communications). Meanwhile, GM is often hamstrung by its own size, which makes decision making and change slow; by vehicle designs that critics frequently characterize as unin-

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- ▶ Read how GM is changing its business philosophy through its e-business efforts
- ▶ Learn why e-business alone can't boost GM's market-share but can still help turn around the company



spired; and by high labor costs and other overhead. On top of that, the North American auto market, which accounted for roughly \$107 billion of GM's \$141 billion in revenues last year, is expected to decline by as much as 10 percent in 2002.

Skeptics say those are the kinds of problems that e-business will not solve. "The alleged benefits of the digital age fail to address the two real problems in the industry: overcapacity and real manufacturing bottlenecks," says Scott Hill, an analyst covering automotive stocks for Sanford C. Bernstein in New York City. E-business is not the only action GM has taken to revive its fortune. GM's zero percent financing in 2001 and ongoing layoffs to reduce costs are two examples. The company also lured Bob Lutz (who helped Chrysler create buzz cars such as the Viper and PT Cruiser) out of retirement to refresh GM's indifferent car designs, and in early 2002 it announced a complete restructuring of the design organization. The other OEMs (original equipment manufacturers, as the Big Three are known) have problems of their own—quality concerns in Ford's case and leftover merger issues in DaimlerChrysler's.

In the face of these changes, e-business leadership remains a centerpiece of Wagoner's list of strategic priorities. The approach, in GM's catchphrase, is "launch and learn," a philosophy that Wagoner describes thus: "Let's get out, take on projects and trials in different places around the world, and see what works." A look at the company's vast portfolio of e-business projects shows that GM is committed to continuing with that approach.

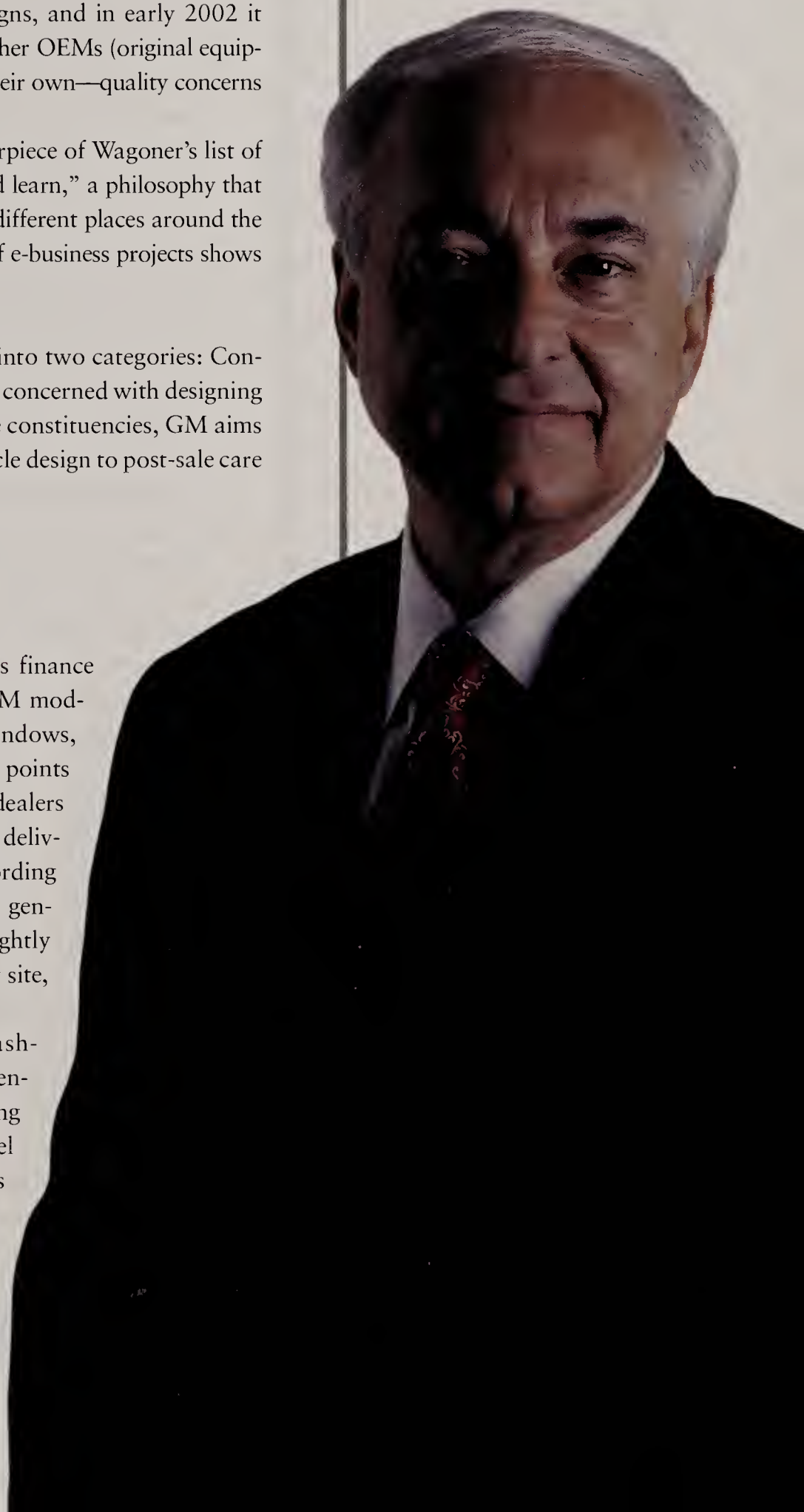
What's on GM's Plate GM's key e-business projects divide into two categories: Consumer and dealer links concerned with selling cars, and supplier links concerned with designing and manufacturing cars. By interconnecting more closely with those constituencies, GM aims to drive costs and time out of the value chain—all the way from vehicle design to post-sale care and, crucially, the demand as well.

FOR CONSUMERS AND DEALERS: ONLINE SALES STRIKE A CHORD AMONG CONSUMERS IN BRAZIL; U.S. DEALERS FLOCK TO WEB-BASED AUCTIONS.

General Motors Acceptance Corp. (GMAC) BuyPower. GMAC is GM's finance arm. BuyPower is a consumer website that provides data on all GM models. Users can get details on the cost of options, such as tinted windows, and save such information in a personalized folder. The site also points potential buyers to nearby GM dealers, indicating the cars those dealers currently have in inventory. Since September 2001, BuyPower has delivered an average of more than 2,000 leads to dealers per day. According to data from J.D. Power and Associates, 20 percent of dealer leads generated through BuyPower convert into sales. That compares with slightly less than 13 percent of leads generated through the top independent site, Autobytel.com.

Retail.com/AutoCentric. This pilot, run in the Washington, D.C., area in 2001, was aimed at generating more leads for GM dealers, using the BuyPower "locate to order" model but presenting information about cars from multiple OEMs, not just GM. GM's motivation lay in the discovery that there is little overlap (about 4 percent) between BuyPower users and

Since joining GM in 1996, CIO Ralph Szygenda has spearheaded a number of e-business initiatives. In one of them, GM sold 77,000 Celta cars (below left) by the end of 2001 entirely online.



General Motors at a Glance

Headquarters
Detroit

Worldwide automotive sales in 2001
\$141 billion

URL
www.gm.com

ESTABLISHED IN 1908, GM has origins that go back to 1897, when Ransom E. Olds launched the Olds Motor Vehicle Co. with \$50,000 and began manufacturing Oldsmobiles. (In 2000, GM announced the phaseout of the Oldsmobile brand.) Today, GM is a diversified company and the largest automaker in the world. Headline brands include Buick, Cadillac, Chevrolet, Pontiac, Saab and Saturn.

GM also has alliances with other auto companies including Fiat, Isuzu and Suzuki. Non-auto manufacturing operations include auto parts maker ACDelco, and financial services company General Motors Acceptance Corp. (GMAC).

those using manufacturer-independent sites such as Autobytel.com. The plan was to create a joint venture called AutoCentric in which GM and its dealers would each hold 50 percent equity stakes. GM formed a partnership to use Autobytel.com's functionality as the engine underlying the effort, which was internally dubbed Retail.com. The pilot, initially scheduled to run 90 days, was extended by several months, but GM ultimately pulled the plug with the admission that "the business model just doesn't work right now." Dealers reported that AutoCentric didn't result in a rise in qualified leads, and the appeal of the equity stake idea went down the drain with dotcom share deflation.

Direct Sales Over the Internet.

GM piloted this process in Brazil with a new car model called the Celta. Nearly 70 percent of the model's 112,000 sales (by year-end 2001) were consummated online. Consumers can purchase a Celta either by accessing the Web from home or by using kiosks at Chevrolet dealerships throughout Brazil. Buyers can also customize their Celta via the Web. The dealer serves only as a drop-off point for the preordered vehicles.

According to GM, Brazil is a price-sensitive market where more than 60 percent of all auto sales are economy models and more than 65 percent of new car buyers have Internet access. Maryann Keller, author of two books about GM and the former president of Priceline.com's automotive services group, entirely dismisses the Celta's success as a tax dodge for consumers who benefited



For CEO Rick Wagoner, becoming an e-business leader is one of GM's strategic priorities.

from a quirky legal loophole (online purchasers skipped a tax normally levied on the factory-to-dealer leg in a conventional buy). GM says that loophole has since been closed and attributes the price advantage of the online purchase—about \$700 less than the showroom sticker price—to efficiencies built in to the supply chain. The Celta's manufacturing process was designed from the beginning to reflect Internet demand rather than just to crank out cars and push them into showrooms and parking lots.

OnStar. GM's satellite-based service can

PHOTO BY JOHN ABBOTT

No matter how impressive GM's approach is to e-business

track vehicles and unlock car doors from outer space. Launched in 1996, OnStar was put under the eGM umbrella and now has 2 million subscribers, although it is not yet profitable, according to published reports. The cost to subscribers ranges from \$17 to \$70 per month, depending on the level of service. On a practical note, OnStar provides GM with something OEMs have never had: frequent contact with customers. GM hopes that will prove to be a platform for delivering more services, as it already has in the case of location-based weather and traffic updates, which were added based on user feedback.

The GM Owner Center. Launched in January 2002, this free online service stores maintenance records and manuals for current GM owners, and also provides service reminders and vehicle-value-estimation tools. The site had 14,000 registered members one week after the official launch, which covered only certain GM

models. Support for other GM brands is being rolled out in the first half of 2002.

DealerWorld. This online portal includes applications such as the just-launched VIN (vehicle ID number) Lookup, which allows dealers to simplify the formerly cumbersome process of determining what incentives a buyer qualifies for on a given model. GM also recently rolled out a package of services and tools that includes templates for the dealers' own websites, which provide a consistent look-and-feel and reduce dealers' burden of site maintenance.

GMAC SmartAuction. This Web-based system allows all GM dealers to bid for leased vehicles that were returned to the dealer and

are now owned by GMAC. This process is cheaper and faster than live auctions (shaving 30 to 45 days off the normal selling time) and also reduces the likelihood of damage to autos because transportation to an actual auction site is eliminated. GM has sold more than 188,000 cars that way since launching SmartAuction in early 2000.

FOR SUPPLIERS: STREAMLINED PURCHASES, FASTER PRODUCT DESIGNS

Covisint. This purchasing exchange, formed by the troika of DaimlerChrysler, Ford and GM, is the most-publicized of GM's links to its suppliers—but it is likely not the most valuable one. GM reports that it has conducted more than 600 auctions on the site thus far. In 2001, the company did roughly \$100 billion in auctions on the site, achieving a reduction of 3 percent in its per-transaction costs for those deals, according to published reports. Because GM's major competitors also use the site, it's natural to assume that Covisint is, competitively, a wash. That's not necessarily the case, says Kevin Prouty, research director of AMR Research in Boston, whose clients include the three major OEMs. Prouty says Covisint may provide an advantage to whichever OEMs use it correctly.

It's one thing to put materials like staplers out for bid. It's another to toss out a long-standing power-train supplier for a cheaper bid only to spend time making sure that power train is up to snuff. That is a process that Prouty describes as "commoditizing relationships" with suppliers—a mistake he says American OEMs have a history of making.

Instead, Covisint, if used correctly, has the potential to accomplish the opposite by building closer relationships with suppliers, according to Prouty. Companies can simply use the exchange infrastructure to execute deals more efficiently. Will GM do this? "It remains to be seen how they're going to

use it," says John Waraniak, who handles Covisint for Johnson Controls, an \$18 billion automotive supplier based in Milwaukee. "You want to reduce the cost and complexity but complement the relationship."

GM SupplyPower. This customizable, secure Web portal provides suppliers with relevant GM news, guidelines and specifications, and contact information. SupplyPower covers a lot of ground, including materials, manufacturing, logistics, purchasing and finance, and it helps reduce the personnel and time required to exchange information with suppliers.

Shared "Virtual Factory" Tools. Massive visualization tools allow GM to determine the cost and effect of various changes to factories, factory floor configurations and tooling. They simulate everything from the rate at which material can be unloaded from trucks with a given dock configuration to the likely traffic patterns on roads surrounding the shop.

Joint Product Design. In 1998, GM's design-to-production cycle took three years. Competitors required two at that point, according to Kirk Gutmann, GM's product development information officer. Today GM has cut its cycle to a year and a half. Gutmann says the competition is still faster by a few months, but the playing field is more level.

The dramatic reduction of the design cycle started with GM getting its internal systems in order, a process that involved standardizing on a single system (Unigraphics), a single product data management system (I-Man) and a single data model for all of GM's 14 design engineering centers. After getting the ball rolling on intra-GM collaboration, Gutmann's group started working toward achieving closer links in the design process. Co-designing a given automotive part helps ensure that the supplier can meet the specifications for that

market share ultimately remains in the hands of the design group.

part and also begin the retooling and production process earlier. GM shares both design tools and data files with suppliers, and partially or fully underwrites the cost of software licenses for select suppliers.

It's going to take some time for true co-design to pervade the auto industry supply chain; a 2001 research study by the Center for Automotive Research found only 12 percent of the respondents were in joint product design with other suppliers. Meanwhile, the competition won't stand still. DaimlerChrysler, for example, has formed a B2B infrastructure group dubbed

E-Connect and recently boasted time reductions of 60 percent to 90 percent in certain steps of its design process. Nevertheless, GM has made great progress in this area.

No small irony: A retiring GM lifer recently commented to Wagoner, "If you keep it up, you'll be able to make cars as fast as we did in the 1950s," when vehicle complexity and regulatory requirements were simpler and the cycle took one year.

The Big Picture With GM forging so many e-business connections, the fate of eGM is a moot point. In fact, GM's B2C

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DRIVER'S ED from our sister publication, **Darwin** magazine, explains how GM's non-IT leaders jumped on the e-biz bandwagon. To e-mail your fellow executives a copy, go to www.cio.com/printlinks.

efforts are far less important than the B2B work. And the approach to e-business projects reflects a fundamental change in GM's thinking, which should prevail regardless of eGM's future.

On the B2B issue, GM's supplier-oriented initiatives are more crucial precisely because of the dire need for a refresh of its auto lineup. "The reason their U.S. market share dropped was because they weren't bringing out cars people really wanted to buy," says Keller. It's an open question whether GM's upcoming designs will reverse the trend, although Lutz helped overcome similar criticisms when he took the helm at Chrysler in 1986, and author Keller says Lutz has already started to make an impact by accelerating certain promising forthcoming models while nixing others. GM's internal revamp and collaboration with suppliers have put GM back into the race.

Still more significant is the change of GM's mind-set. "You need a different attitude than when you're developing a car and you have to meet safety standards, where you can't afford not to be right," says Wagoner, when asked what GM has learned from its e-business ventures. "[In e-business] we'd like to be right every time, but the cost would be that we'd be slow, expensive and probably last-to-market in a lot of areas."

By running limited pilot versions of e-business projects, GM experiments in a cost-effective manner. Asked about how his group determines the right amount of resources to allocate to each project, Szygenda says his team holds sometimes-



Playing catch-up: By standardizing on internal IT systems, Product Development Information Officer Kirk Gutmann helped trim cycle times by half, putting GM back in the game with the competition.

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Organizing for E-Business

GM's Information Systems and Services (IS&S) group has a matrixed organizational structure. Each business unit has its own CIO; Dan McNicoll, for example, heads up systems for GM North America, which accounts for about \$107 billion of GM's annual auto sales. Another set of executives, called process information officers (PIOs), takes a cross-unit look at all the information systems associated with a particular business process, such as manufacturing. CIO Ralph Szygenda brought most of the PIOs aboard from outside GM, which interviewed 280 candidates to fill 30 key positions.

"Some people criticize the matrix structure for creating tension, but it's intentional," Szygenda says. The divisional CIOs pull in the direction of immediate results for their business unit, while the PIOs pull toward cross-unit standards. They also provide subject-matter expertise that the divisional CIOs "just don't have time" to develop, says Szygenda. Whatever the pros and cons of the matrix, it's hard to argue with GM's operational results. Its IS&S budget, roughly \$4 billion in 1996, has been lowered by more than \$600 million per year. The infrastructure is more robust (LAN bandwidth is greater by a factor of 10, for example), literally thousands of legacy systems have been replaced, and GM's vast systems portfolio is increasingly standardized. —D.S.

heated priority-setting discussions, but he ultimately boils it down to "gambling." Ask GM executives about the goals they set prior to launching various initiatives, and the answers are uniformly nonspecific. That's true even in a clear success like the Celta, of which GM's Hogan will only say, "I guess we might have hoped for 50 percent of those sales to happen online, so we've been pleasantly surprised." That attitude reflects a significant shift of mind-

stock in 1999—stock Ford later dumped for less than \$1 million.) In all, GM's e-business work benefits greatly from continuity of leadership. Szygenda has been the CIO of GM for six years. Ford, on the other hand, has had three CIOs during the same period.

By paying for initiatives without crippling company finances, GM is taking a smart approach to e-business. The company takes acceptable risk, runs pilots, learns and pulls

GM has paid for all its e-business plans while cutting its annual IS budget by more than \$600 million.

set for a traditionally slow industrial giant in a traditionally slow industry.

Expect GM to continue to invest in e-business. The IS group has delivered the lineup of e-business initiatives without breaking the bank, partly because of the small-pilot approach and partly because the IS budget prior to 1996 was so bloated that Szygenda's group has been able to pay for all the company's e-business plans while still cutting the yearly IS budget by \$600 million to \$700 million, to just over \$3 billion today. Furthermore, GM holds equity stakes in 38 Internet-based and software businesses—stakes gained without spending a dime, by providing those vendors with product development guidance and one of the world's biggest customers. (That contrasts with Ford, which bought its way into Internet equity via a \$50 million purchase of Internet Capital Group

the plug when necessary. Critics say GM is too ponderous to act quickly, but regardless of the fate of AutoCentric or eGM itself, GM has entirely defied those critics with its e-business efforts.

In the end, though, e-business won't amount to more than a small hill of beans if GM can't significantly raise its share of the market. E-business can't do that—at least not directly.

No matter how impressive GM's approach is to e-business, market share ultimately remains in the hands of the design group. Until GM puts compelling vehicles on the market, all the digitization in the world won't turn consumers' heads. However, e-business links and process reengineering are steadily chipping away at the time required to get those new designs from the drawing board to the showroom. So Szygenda's organization—with all the pain and sweat and the occasional missteps that come with the territory for e-business—is making GM's core business activities faster, cheaper and more effective.

That's what IT is supposed to do. **CIO**

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What do you have to accomplish with e-business to call it a success? Share your findings online at **TALK BACK**, and **LEARN MORE** in an exclusive interview with CEO Rick Wagoner, both at www.cio.com.

Executive Editor Derek Slater previously covered the auto industry in "Car Wars" (www.cio.com/printlinks). E-mail him at dslater@cio.com.



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Web services promises companies that they can exchange data and business capabilities using Internet technologies. Three businesses demonstrate the benefits of starting a Web services project now.

BY SUSANNAH PATTON

Oil giant Royal Dutch Shell is doing it. So are financial services company Merrill Lynch and travel technology company Galileo International. Those corporate heavyweights are experimenting with Web services, an emerging approach to application development that promises to save time and money by changing the way companies build and use software.

Web services, a major new trend in standards-based software technology, is made up of pieces of custom-developed code that lets two or more Web-based applications talk to each other. Those services can pull a single piece of data (such as a stock quote) or an entire business process (such as checking a customer's credit and giving him a credit score). Down the road, advocates say, Web services will allow organizations to integrate and reuse software that they or others have already built. Instead of owning and maintaining all their own hardware and software, companies will buy IT systems as services pro-

vided over the Internet. The hope is that through the use of Web services, the blood, sweat and tears now involved in systems integration will dissipate, leaving both companies and consumers better able to use and exchange a wide range of capabilities and information over the Internet.

Web services can help companies integrate disparate systems for less money than traditional methods. EDI has helped companies exchange data for years, but it lacks flexibility and is costly to maintain. And where an enterprise application integration package can run into the hundreds of thousands of dollars, Web services that can meet comparable business goals can be built for tens of thousands of dollars.

Adding to the momentum: Top technology vendors, including BEA Systems, IBM, Microsoft, Oracle and Sun, have agreed to support a set of standard software technologies that spell out how different computer systems should interact with each other—an unusual level of cooperation. In

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- ▶ Learn why you should start a Web services team if you haven't already
- ▶ Understand both the pros and cons of this technology
- ▶ See how three very different organizations have started to use Web services

addition to the data exchange standard XML, three new standards—simple object access protocol (SOAP); Web services description language (WSDL); and universal description, discovery and integration (UDDI)—let Web services talk to one another. So far, companies experimenting with Web services have been focusing on XML and SOAP and are still examining uses for UDDI and WSDL, which will allow them to advertise their Web services in online directories.

Web services doesn't come without drawbacks. For the moment, most companies are keeping their Web services projects behind company firewalls because of lingering network security and reliability

concerns. Other technology and business questions also remain unanswered: How will organizations make sure that the company delivering a Web service will keep the service up and running reliably? Who will be held accountable if a Web services rollout fails?

A public online directory of Web services is months, if not years, away, but IT leaders now need to experiment with Web services technology. Three organizations—Life Time Fitness, the Med-Biquitous Consortium and Nordstrom.com—provide clear examples of how to begin a Web services strategy and gauge its potential for your business.

Nordstrom.com

If the Web Services Shoe Fits...

Retailer links three generations of systems to boost website sales

At Nordstrom.com, a technology need inspired the company's use of Web services. The online arm of Nordstrom department stores calls itself "the world's largest shoe store," offering more than 20 million pairs online. Each time a customer orders a shoe, that order is sent to the shoe manufacturer via EDI, XML or e-mail messages. The result: Orders move more quickly and smoothly than if Nordstrom had to keep all the shoes in stock, and customers benefit from a wide selection.

The online retailer wants to use Web services technology to communicate more than order and inventory information to its suppliers. Using Web services, Nordstrom.com plans to make forecasts and reports instantly available to its drop-ship vendors so that they can better match inventories to Nordstrom.com's sales forecasts. In contrast with the more traditional means of integration and data sharing, such as EDI, Web services offers a more flexible or "loosely coupled" way of linking applications. Where EDI allows companies to exchange data, such as purchase orders and invoices in structured formats, Web services lets companies open up their systems and share a wide array of information with far less tailoring. Ideally, customers will have a better experi-

ence because the shoes they want will be in stock more often.

So necessity bred action. Even though Nordstrom.com doesn't have an exact time frame for this project—largely because many of its shoe vendors can't yet support Web services—the company's vision is within reach, says former CTO Paul Onnen. That's because Nordstrom.com is already using the technology to link its online operations to mainframe systems at parent company Nordstrom in Seattle and at banking sub-

sidary Nordstrom Federal Savings Bank in Denver. "Web services are already a part of the way we do business," Onnen says. "We just happen to be a little bit early because we had the need and the technology."

Onnen latched on to Web services last spring when he was looking to sell cosmetics on Nordstrom.com. The website is built on a Microsoft platform, but the ERP system that checks inventory and places the order is a Nordstrom.com system running on HP Unix servers. To complicate matters further, all the inventory information is stored on an IBM mainframe at Nordstrom's Seattle headquarters. The goal here was to get all the systems talking to each other.

Onnen considered going the more traditional route, using IBM's MQSeries middleware to knit the systems together. Instead, Nordstrom.com chose a software platform from Iona Technologies. That allowed developers to build a Web services application that links the disparate systems and provides real-time inventory information across the different platforms. (So a shopper could see if that Lancôme body cream was available.)

Using Web services, Onnen accomplished this for less time and money. With middleware, Onnen says, one application exchanges data with another in a connection that must be custom built. But with Web services, Nordstrom.com can take the customer's order data and hand it off to numerous other systems. "The key with Web services is that you only have to build it a single time," says Onnen.

Most recently, Nordstrom.com used Web services to allow customers to buy gift cards

NORDSTROM.COM

LOCATION: Seattle

ANNUAL REVENUE: \$5.6 billion
(parent company, 2001)

BUSINESS: Online arm of retailer
Nordstrom

WEB SERVICES APPLICATION:
Integrates website and call center
with inventory data stored on main-
frames at Nordstrom, and gift cer-
tificate information at Nordstrom
Federal Savings Bank

THE PAYOFF: Online shoppers get
faster service on ordered goods and
can check gift-card balances online

SOFTWARE PARTNER:
Iona Technologies

Application Development

online and by telephone. In this case, Nordstrom.com wanted to connect the website directly to an IBM mainframe at its savings bank to do gift-card balance queries and redemptions. Onnen and his team built a single Web services tool that allows all the parties—Nordstrom.com, the bank, the call center—to query a gift-card balance. So when Ms. Smith wants to redeem her Nordstrom's gift card, she can either go to



a store or cash it in at Nordstrom.com.

Onnen says he sees no drawbacks to his company's early experimentation with Web services and plans to expand its use on the company's systems. The challenge with being an early user is that some merchandise vendors and business partners may not yet have tools in place to support Web services. In order for Web services to work effectively, he says, those partners must implement the same technologies so that the systems can speak to one another.

Onnen stresses that Nordstrom.com hasn't yet used Web services over a public network, choosing instead to interact with internal units and trusted business partners over a secure network. That's because sending Web services over the Internet can leave companies vulnerable to both security and network reliability problems.



Web services enabled Life Time Fitness to build bridges to an ASP's scheduling application, says CIO Brent Zempel.

Life Time Fitness

A Web Services Warmup

Application to serve customers could end up generating revenue

Up until January, when Life Time Fitness's 300,000 members wanted to make an appointment for a personal trainer, book a racquetball court or schedule a massage, they would have to call their individual club. If their favorite masseuse was booked, they had to call another club. Add all of that up and you get lots of hours wasted by members and employees alike.

Enter Web services. Through a portal built on Web services technologies, registered users can now log on to the company website to plan workouts, book massages and chart their fitness progress. Life Time employees can also manage their schedules and keep track of clients via the company intranet. This may sound like small potatoes, but the implications for Life Time's business—and for other companies—are broad. And without Web services, the company would not have been able to afford to build its own scheduling system.

The health club chain started working on

its Web services approach in 2000, when the IT department was migrating away from its legacy environment and its dependence on a single technology vendor. "The original goal was to reduce the cost of building new

LIFE TIME FITNESS

LOCATION: Eden Prairie, Minn.

EMPLOYEES: 4,400

BUSINESS: A chain of 26 "sports resorts" in six states

WEB SERVICES APPLICATION: Integrates Life Time's website and intranet with an online scheduling system from ASP Xtime

PAYOFF: Life Time's 300,000 members can use its website to book health club facilities and services; customer self-service saves employees' time; employees can use the scheduling app on Life Time's intranet

SOFTWARE PARTNER: Sun Microsystems



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The Basics *Web services terms you need to know*

Web services relies on software standards. Here is a brief description of what each of the four major Web services standards does.

SOAP (simple object access protocol)

Describes how one application dials up a Web service and asks it to perform a task and return an answer. SOAP makes it possible to use Web services for transactions—for example, checking inventory in real-time and placing an order.

UDDI (universal description, discovery and integration)

A virtual yellow pages for Web services that lets software discover what Web services are available and how to hook up to them. Companies can maintain an internal UDDI registry to keep track of the Web services they have

already built. Major software vendors are working together to develop a public UDDI registry that will enable companies to find each other's Web services over the Internet.

WSDL (Web services description language)

If UDDI is a virtual yellow pages, WSDL is the little blurb associated with each entry that describes what kind of work the Web service can do—for example, it can give you access to a database of ZIP codes.

XML (extensible markup language)

A meta-language that lets programmers write their own tags to identify information on a webpage and put it into context (for data related to shoe size and color, for example).

applications and to shorten the time it takes to get into production," says CIO Brent Zempel. Life Time initially set out to build a Java-based member management system for its internal use. Once that project was complete, the company started to experiment with Web services that could move beyond its firewall. Instead of developing all the applications in-house, Life Time partnered with vendors such as Xtime, an ASP in San Mateo, Calif., that develops time-management and scheduling software.

The result: Life Time is able to integrate its Internet and intranet with the Xtime application using Web services. For example, when a fitness club member starts the Xtime application on Life Time's website, that move triggers a hyperlink to an Xtime secure page. The sites exchange certificates to verify each other's identity, and the member's information is transferred from Xtime back to the Life Time site via a SOAP interface. Life Time hasn't yet used UDDI because its services are published only to known client subscribers. But it does plan to start using WSDL within the next six months in order to describe what services it offers and how customers can connect.

Life Time Fitness says it's hard to judge exactly how much money it will save

through Web services technology. But Zempel and Wesley Bertch, director of software systems, say the company could never have built the "services automation engine" that it now subscribes to through Xtime. "We would not have been able to afford the \$20 million it would have taken to do this ourselves," says Bertch.

Despite the broad advantages, Bertch

notes that moving to Web services is more complicated than plugging into an ASP. The company's 52-member IT staff had to be retrained in Java technology and in the use of Web services standards such as SOAP. And because Life Time links its website to an outside ASP (Xtime) via Web services, the development team had to set up an elaborate system for security. "We've dealt with security using brute force," Bertch says. By that, he means his developers have manually set up authentication certificates between the two sites. "This kind of manual work can be time-consuming," he says. "But the benefits of what we're getting out of Web services—such as faster development time and cheaper implementations—outweigh some of the pain associated with it."

And Life Time officials say they expect that the benefits of Web services will only grow as more suppliers and vendors jump onto the bandwagon. Life Time also has its own plans to bring in revenue from its Web services initiatives. According to Zempel, about 80 organizations, including other health club chains and universities, have asked to purchase Life Time's member management system.

MedBiquitous

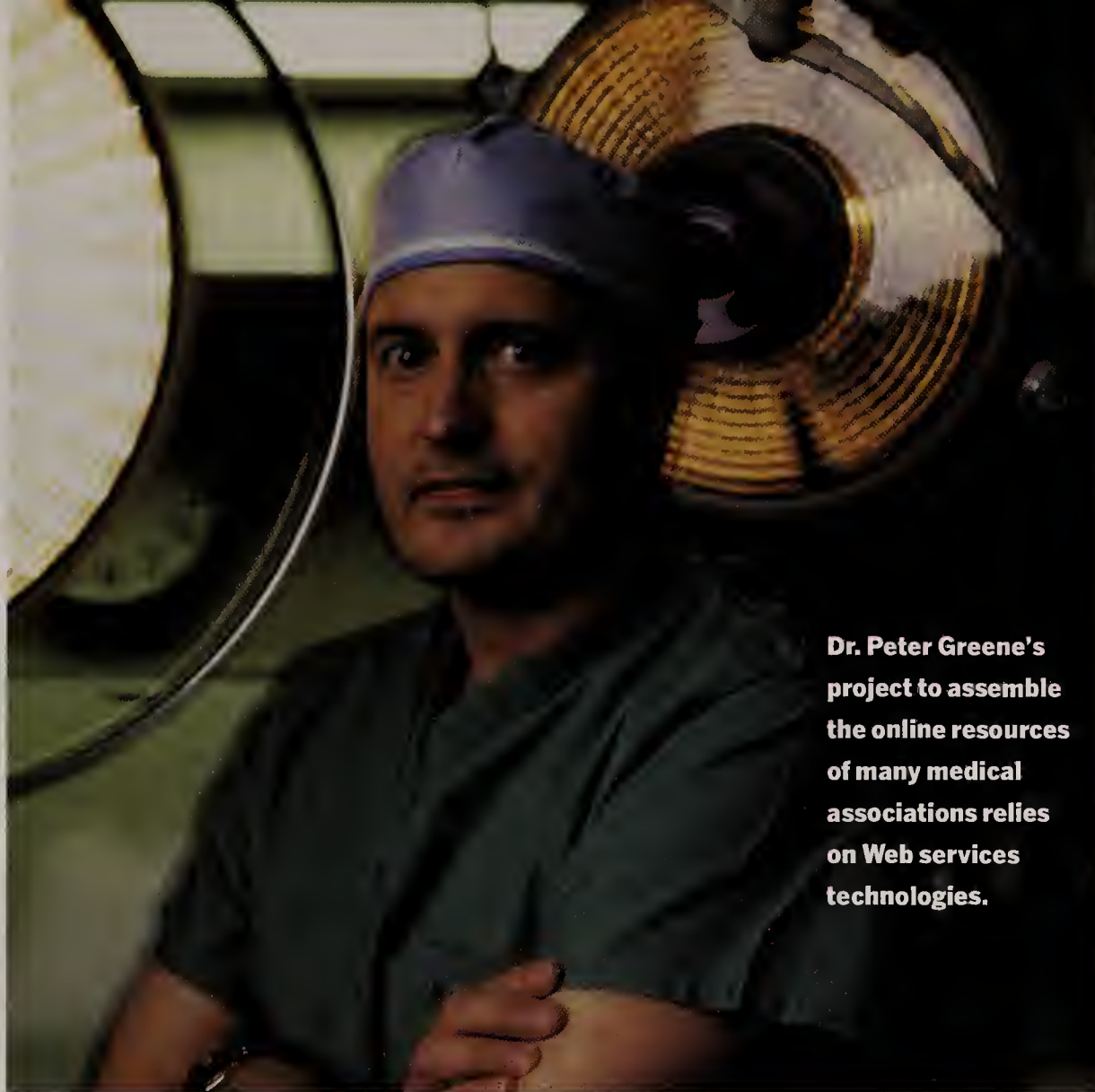
A Web Services Prescription

The need to link doctors to medical research spurs Web innovation

As a cardiothoracic surgeon, Dr. Peter Greene wanted to be able to stay on top of his specialty online by exchanging the latest on surgical procedures and new research at one site. With that ambition, he helped start CTSnet.org, which brings together 40 societies related to his field into one online community. "My goal was to instantly be able to put my fingers on the latest information from the around the world, all with a single sign-on," says Greene. "We learned that we

could share a common server and middleware to help us stay in touch."

Through his experience with CTSnet.org, Greene, the associate dean for emerging technologies at Johns Hopkins University Medical School in Baltimore, saw a greater opportunity. Why not bring together the world's medical societies and allow them to communicate online using a common platform? The problem was that these thousands of sites all ran on different systems and used different software. For the past



Dr. Peter Greene's project to assemble the online resources of many medical associations relies on Web services technologies.

year, Greene and his colleagues—with help from IBM, Rational Software and Sun—have been working to create core standards that will use Web services to link the associations.

The MedBiquitous Consortium, which now has 23 members including the American Medical Association, is in the process of setting up these standards and is testing applications that will allow doctors to share information about the latest research, education

and training opportunities on an unprecedented level. “Health care is a \$1.3 trillion cottage industry, and there are silos of information that will never get unified on common databases,” Greene says. “Web services technology addresses the reality that you’ll never join the hardware, but that you can get them speaking over the same platform.”

Some applications are already in testing mode. A doctor can log on to her professional society’s website and look for online

MEDBIQUITOUS CONSORTIUM

LOCATION: Baltimore

ANNUAL REVENUE: Nonprofit group initially funded by Johns Hopkins Medicine

THE BUSINESS: A consortium of medical associations working to build a technology platform—using Web services—that will allow the disparate medical groups to interact online. Two other arms of the project are also moving forward with Web services: an R&D group called MedBiquitous Laboratory is developing new applications; CorMed is a for-profit group that provides technical help to medical societies.

WEB SERVICES APPLICATION: Allows doctors belonging to medical societies around the world to share continuing education and other key data on a Web services platform

THE PAYOFF: Doctors will be able to log on to their individual society’s site and communicate with colleagues around the world, as well as take care of business such as calculating continuing education credits and subscribing to medical journals.

SOFTWARE PARTNERS: IBM, Rational Software, Sun Microsystems

PEER RESOURCES

What your colleagues need to know about Web services

It’s all in **“THE ESSENTIAL GUIDE TO WEB SERVICES”** from our

sister publication, **Darwin** magazine.

To e-mail a copy to your colleagues, go to www.cio.com/printlinks.

continuing education courses related to her medical specialty. The society’s site uses Web services to gather course listings from other societies, and the doctor can take one course residing on another society’s server without leaving her own society’s website. With help from CorMed, the consortium’s for-profit arm, individual medical societies can now take advantage of applications ranging from membership management (in a similar way to how Life Time Fitness uses Web services) to journal article submissions and online discussion forums.

In the end, the idea is to create a network of communities through which doctors can communicate and keep track of new research and techniques. “We want to make it so doctors don’t have to worry about the technology,” says Jon McBride, CTO at CorMed. “They should be able to get real-time information when they need it instead of digging around on dozens of sites.”

But given that doctors haven’t always been the easiest to convince when it comes to trying new technologies, will they use the new systems? Greene says, “Yes.” The main barrier has been convincing doctors that they can save time by using the Internet and other technologies. “Doctors need technology that will help them do their work more efficiently,” he notes. “If you slow them down, they won’t use it. We’ll get broad adoption if we get the right, usable technology out there.” And Web services might just fit the bill. **CIO**

Tell us your Web services tales at letters@cio.com. Senior Writer Susannah Patton can be reached at spatton@cio.com. *Darwin* Senior Editor Sari Kalin contributed to this story.

Case Files: Honeywell International's Aerospace Solutions

CUSTOMER FOCUS

KNOWLEDGE MANAGEMENT

PROJECT MANAGEMENT

VALUE PROPOSITION

COMPANY INFO

FOUNDED

1927

REVENUES

\$10 billion

HEADQUARTERS

Phoenix

EMPLOYEES

49,000

CUSTOMERS

Approximately 10,000, including Airbus, American Airlines, Boeing, Continental and Delta Air Lines

MISSION

To provide customers with aerospace products and services

URL

www.honeywell.com

CRM OBJECTIVE

To provide a single face to the customer

THE PLAYERS

PRUITT LAYTON, vice president of sales and marketing for Honeywell International's propulsion systems business and former director of sales support for AlliedSignal Aerospace; **LYNN BRUBAKER**, vice president and general manager of commercial aerospace; **DAVE RYAN**, manager of Aerospace CRM

THE EXPERT

WENDY CLOSE

CRM research director, Gartner

Cleared for Takeoff

Failure to rethink business processes—not technology trouble—grounds most CRM implementations. At Honeywell Aerospace, taking the time to retool business processes is paying off.

BY MERIDITH LEVINSON

WHEN THE CEOS OF American Airlines and AlliedSignal met in 1995, American's Bob Crandall dealt the manufacturer a sobering blow. Fed up with the service his company received from AlliedSignal's aerospace division, Crandall told AlliedSignal CEO Larry Bossidy that if he could find another supplier of parts for his airplanes, he would switch in a heartbeat.

In fact, American Airlines wasn't the only customer dissatisfied with AlliedSignal. At air shows and in client meetings, AlliedSignal executives heard the same complaint over and over. "Our customers were telling us, 'You're too hard to do business with,'" recalls Pruitt Layton, vice president of sales and marketing for Honeywell International's propulsion systems business and former director of sales support for AlliedSignal Aerospace. (AlliedSignal and Honeywell merged in December 1999 to form Honeywell International.)

The customer complaints were often justified.

AlliedSignal Aerospace's four business units had no way to share information about sales opportunities, the status of maintenance requests or the products customers had on their aircraft. With 40 independent product lines to market, it was not uncommon for several salespeople across the aerospace division to contact the same customers during the same week—or even on the same day—without knowing they were doing so. Large customers sometimes had as many as 50 points of contact with the company. This Keystone Cops routine infuriated AlliedSignal's customers, some of which began using AlliedSignal's lower-cost competitors. Layton says those competitors posed a long-term threat to AlliedSignal Aerospace's business, which also happened to be AlliedSignal's big revenue generator.

Executives at AlliedSignal knew they had to improve their sales tactics and customer service record if the company was to thrive in the highly



Dave Ryan, manager of Aerospace CRM, helps sales managers and field service engineers map out how they can use Honeywell's new CRM system.

Lynn Brubaker (right), vice president and general manager of commercial aerospace, says the system has helped Honeywell Aerospace vastly improve its relationships with customers.

the company is depending on the CRM system to help make it easier for customers to do business with Honeywell—and easier for Honeywell to get the most out of its sales and service teams.

Failures and Transformation

AlliedSignal Aerospace had been dabbling in SFA since 1994. Sales reps used FoxPro databases to “computerize” their sales plans, says Lynn Brubaker, Honeywell’s vice president and general manager of commercial aerospace. “It was very limited [in functionality],” she says. Vice President of Sales and Marketing Layton adds that it was difficult to share information stored in the FoxPro databases. “You could manage your own account, but it was real tough to send [FoxPro] attachments to other people,” he says.

Using an application called SalesKit, AlliedSignal Aerospace developed an SFA tool that enabled data sharing in late 1995. That new system operated off a central server, but it was not Y2K compliant.

The need for a centralized, Y2K compliant system prompted the company to begin implementing Siebel in the aerospace division in fall 1998. Having been burned by small, unstable software companies in the past, AlliedSignal wanted to go with a company that would be around for at least five years. Siebel’s Call Center application met the company’s functional requirements—and AlliedSignal would be able to Web-enable it and integrate it with its ERP system. And given the complexity of the undertaking, AlliedSignal wanted a vendor that

competitive post-Cold War aerospace market. So to solve the customer service problem, the company began implementing a CRM system from Siebel Systems in 1998.

Fast-forward to 2002, and much has changed. The merger with Honeywell came in 1999. And now that those uncoordinated sales and service calls are becoming a vestige of the past, Honeywell is even winning supplier of the year awards. But the crusade to improve the company’s customer service reputation hasn’t been easy. It has required

some major rethinking of sales and service practices, and a concerted effort to convince employees—many of whom had weathered two previous sales-force automation (SFA) failures—to forsake their siloed, homegrown customer information systems for new, integrated CRM software. The importance of that crusade is becoming increasingly clear now that big customers such as Belgium’s Sabena and Swiss Air are declaring bankruptcy and the aerospace industry is reeling from the Sept. 11 attacks. More than ever,

could devote technical staff to the implementation if needed.

Today, one common customer information system is used by sales reps, field service engineers, product line personnel and response center agents across Honeywell Aerospace's three main business units (aircraft landing systems, avionics equipment systems, and engine systems and services). Known as Aerospace Total Account System, or Atlas, the system encompasses tools for sales-force automation, account management, campaign management and Honeywell Aerospace's response center. As a result, everyone using the system can see which Honeywell products a client owns as well as the status of parts being serviced, and can identify additional sales opportunities. But most important, the system has allowed Honeywell to replace its product-centric sales approach with coordinated, customer-centric sales processes. Salespeople from different product lines no longer deluge customers with separate, uncoordinated phone calls. Instead, a team of sales reps and field service engineers from across the division's three main business units coordinates its activities through Atlas. For many of the customer account teams, a single employee serves as the primary point of contact for each customer—regardless of the product that customer wants to buy or service—and coordinates all sales and service calls. If a customer has a problem with a part, he has one point of contact for service, not one for each Honeywell part on his airplane.

A CRM Program Office Is Born

But getting to this point required a lot of persistence on the part of Dave Ryan, the original program manager for the Atlas rollout. When AlliedSignal Aerospace began deploying Atlas in 1998, Ryan embarked on a major campaign to train the first 600 global users on the system. (Right now, 2,000 Honeywell Aerospace employees use Atlas, and it will be rolled out to approximately 2,000 more employees as new functionality is added.) He held training sessions at major Honeywell Aerospace facilities and put materials on CDs

and online so employees could brush up on what they learned in class. In spite of all the training, employees still weren't using Atlas.

Ryan recounts a typical frustrated product line director who approached him after two days of Atlas training with his sales team. "He came back from the training class and said, 'This is a great tool. I understand how to navigate around, but I don't understand how, as a team, we replace what we're currently doing with this tool. I still have all the other tools out there,'" Ryan recalls.

Ryan sat down with Layton, then his boss, and together they identified the system's strengths and weaknesses, opportunities to better use it and threats to its adoption from

competing systems. The bottom line was that while people understood Atlas and the processes it enabled, they didn't know how to make it fit their own business processes. And they weren't eager to give up their tried-and-true customer information systems.

To address users' needs—and ensure that competition from the homegrown systems wouldn't thwart Atlas's success—Ryan and Layton created the position of manager of Aerospace CRM. In that new role since March 2000, Ryan now works with sales and field service employees to define their business processes and map out how best to use Atlas to support them. Ryan and Layton also created a CRM program office staffed by both

EXPERT ANALYSIS

THE CRM BUY-IN CHALLENGE

BY WENDY CLOSE

MORE THAN 80 PERCENT of salespeople view the technology that was "imposed" on them in the past year as a failure. Why is this? Sales technology implementations fail for a combination of reasons. If salespeople believe that they have not been sufficiently consulted or involved, if they cannot see a direct day-to-day benefit to them personally and if they feel their concerns have not been addressed, then they will boycott the new tools or revert to using the old tools and ways. Developing the approach, tactics, new processes and skills that will drive the exploitation of whatever technologies are chosen is the hard work.

In its third attempt, Honeywell Aerospace wisely created a team-selling sales process, in most cases with one lead individual charged with managing a team of sales reps and service engineers, creating a single point of contact for the customer. That was key. The division went from being product-centric in organizational design to becoming customer-centric, organizing itself around the customer, not business units. After this fundamental organizational change took place and new business processes were defined, then the CRM software could enable the new customer-centric business model. The software itself is the enabler, not the primary source of the benefit.

Return on investment from CRM is created in part from the extensive process and change management associated with CRM programs. Software applications—whether Siebel or any other—account for 20 percent to 28 percent of the CRM investment and are correspondingly small contributors to the overall CRM benefit. In fact, we believe 80 percent of the benefit of a CRM program comes from new business processes; only 20 percent of the benefits are derived from technology.



Wendy Close, a CRM research director at Gartner, is a CRM generalist with 11 years of experience. She can be reached at inquiry@gartner.com.

Dynamic Duo

It's a powerful one-two punch in managed hosting and storage. From super heroes Qwest and EMC.

It's like some sort of creature that has suffered a freak radiation dose and has grown to the size of a twenty-story building. Digital business data is increasing at an exponential rate, threatening to overtake us all. But that mammoth monster can be tamed. And two super hero companies stand poised to help put that data's tremendous powers to good use: Qwest® and EMC®.

Information has become an extremely valuable business asset. And since more and more critical business programs (such as CRM, ERP, and SCM) are generating greater and greater amounts of raw digital information, it's not surprising that research shows data capacity for most companies will have to double every 8 1/2 months just to keep up (*Enterprise Storage Group, 2000*).

As all this data grows more vital to success, enterprises must be more cautious of the growing threat to that vitality—from evil hackers, data corruption, power outages, natural disasters, and even the unthinkable. Existing data architectures must be examined for reliability and security across the hosting, storage, and network elements of an IT environment. Data protection strategies must be tested. Points of weakness must be eliminated.

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The old formula (DAS) seemed invincible. Buy storage and hook it up to your network. Done. But as data sources become more varied, companies are finding that implementation of uniform protection and access strategies throughout the IT architecture can be an overwhelming task. The required expertise and resources are difficult to acquire and often cost prohibitive. Even if you do manage to squeeze out funds to design, buy, and run your own high-level data center, you can end up with a single point of failure. One disaster, small or large, might bring business to a halt.

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where data is easily accessible regardless of source and across computing platforms.

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The Mighty Match-Up

Together, QWEST and EMC deliver a data storage solution that can't be beat.

A recent Gartner Group report shows that external storage is growing at a 104 percent compound annual rate, and will grow to more than 3.8 million Terabytes by 2005. To keep all of those ones and zeros ready for use at a nanosecond's notice takes a storage management solution that is adaptable to whatever demands come its way.

SUPER STORAGE

EMC's Symmetrix® and CLARiiON® families of products are server-agnostic in design, consolidating information across computing platforms. When managed by Qwest Storage Services, these solutions can transform a company's data from a cost item into a mission-critical asset.

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- Managed Tape Backup—Copies live data from server to tape.

It's no secret that managed storage networking can provide a real competitive advantage by making data more accessible, regardless of medium and application. It can also boost a company's ROI by cutting key costs associated with storage, such as management and personnel expenses.

* For access to a server hosted in a Qwest CyberCenter facility located in CO or WA or provision of certain other Internet based services in the states of AZ, CO, IA, ID, MN, MT, ND, NE, NM, OR, SD, UT, WA and WY, Qwest utilizes a separate, required Global Service Provider (GSP) that supplies connectivity to the global Internet.



business and IT people who are responsible for training users and finding ways to incorporate Atlas into their daily routines.

When Ryan sat down with the field service engineers, he learned that they weren't using Atlas because they were being asked to use multiple tools to record events and document service requests for the same customer. As a result, the engineers tended to use only the tools that dealt with the most critical information. Ryan mapped the engineers' existing workflow processes (which involved using several websites and several laptop applications) and established new ones that would enable them to track service reports and requests more efficiently in Atlas alone. Then the program office sent an e-mail to field service engineers from the vice president of customer service, telling them to log in Atlas customers' product problems and the time it took to resolve them.

"We've seen a tripling of the amount of information coming in [to Atlas] from the field because we've provided a structure and process for collecting the information in a single spot and for making it visible to all the people who need it," Ryan says.

On the sales side, Ryan worked with managers in each of the business units to create a new, single sales process for all of Honeywell Aerospace that ties in to Atlas.

Still, many users steered clear of the new system because they were attached to the Excel spreadsheets, Access databases, websites and custom-built applications they had been using to manage their customer data. Ryan says that many employees feared that time devoted to learning the new system would be wasted because they'd seen two other SFA tools disappear before Atlas. Talking to them one-on-one, Ryan had to persuade them that Atlas was different—and was going to last. After all, the entire com-

CRM at Honeywell Aerospace Solutions

PROCESS CHANGES

Account teams—rather than a dozen different salespeople in different businesses—serve customers. Response center agents are empowered to resolve customers' issues.

ENABLING TECHNOLOGY

Siebel System's Call Center application, which combines functionality from Siebel's Sales and Service applications, runs on an Oracle database, which runs on a hybrid of a Unix and NT platform in both Web-based and client/server environments.

PAYOFF

Consolidated and streamlined sales processes and complaint management system. Customer information accessible to 2,000 Honeywell Aerospace employees using Atlas. Revenues for after-market special programs business doubled.

pany was going to use Siebel, and the system had top management's endorsement.

Even so, many users were discouraged that Atlas wasn't as easy to use as e-mail and their other proprietary tools. Mike Beazley, one of Honeywell Aerospace's account team leaders, says that when he had a question about an account, he used to just e-mail it, knowing the recipient checks e-mail regularly. Using Atlas, he has to fill out about 12 fields on a screen before he can log a service request. Then he just hopes the individual responsible for the request opens Atlas—and that his request doesn't go into a black hole, he says. But after getting used to the tool, Beazley sees how the system makes everyone's life easier. In fact, he calls Atlas "one nice central location to store data and to refer other people to when they ask me a question."

Because it is so hard to get people to give up old ways of doing things, the program office leads an ongoing campaign to stamp out all of the legacy systems. For example, the customer support group had been using

its own database to track customer inquiries. The program office worked with the customer support group to format the data for Atlas, then the IT department extracted the data from the old system, imported it to Atlas and shut down the old database.

Stamping out reliance on e-mail is trickier because the program office can't mandate shutting down the e-mail system. Instead, the program office has worked with individual account teams to redefine their process for exchanging information using Atlas rather than e-mail. Ryan's person-to-person evangelism has also come in handy. "Dave's been meeting with the product line leaders, finding their biggest business problems and working with them to understand how the system enables their processes," says Layton. "That's been very effective."

The Payoff

The creativity and persistence of Ryan and the program office have already begun paying off. Sales more than doubled in the after-market special programs group—which essentially sells spare parts—during the first year the group began using Atlas. With the same number of salespeople, after-market revenues increased from \$45 million to more than \$100 million. Although some of that jump can be attributed to offering new, more expensive products, the after-markets special programs group attributes 20 percent of the growth to efficiencies brought about by Atlas.

"It's a very good example of how being a little bit more productive and having quicker access to information allowed field sales to handle more phone calls in a day and more direct sales," says Ryan.

Before Atlas, Beazley spent a few hours a week writing up monthly reports summarizing sales activity to give to his managers. Now he simply refers them to Atlas where they can run their own reports. "The extra time goes into putting my feet up and eating bonbons," jokes Beazley. "No, it goes into more time with the customer." **CIO**

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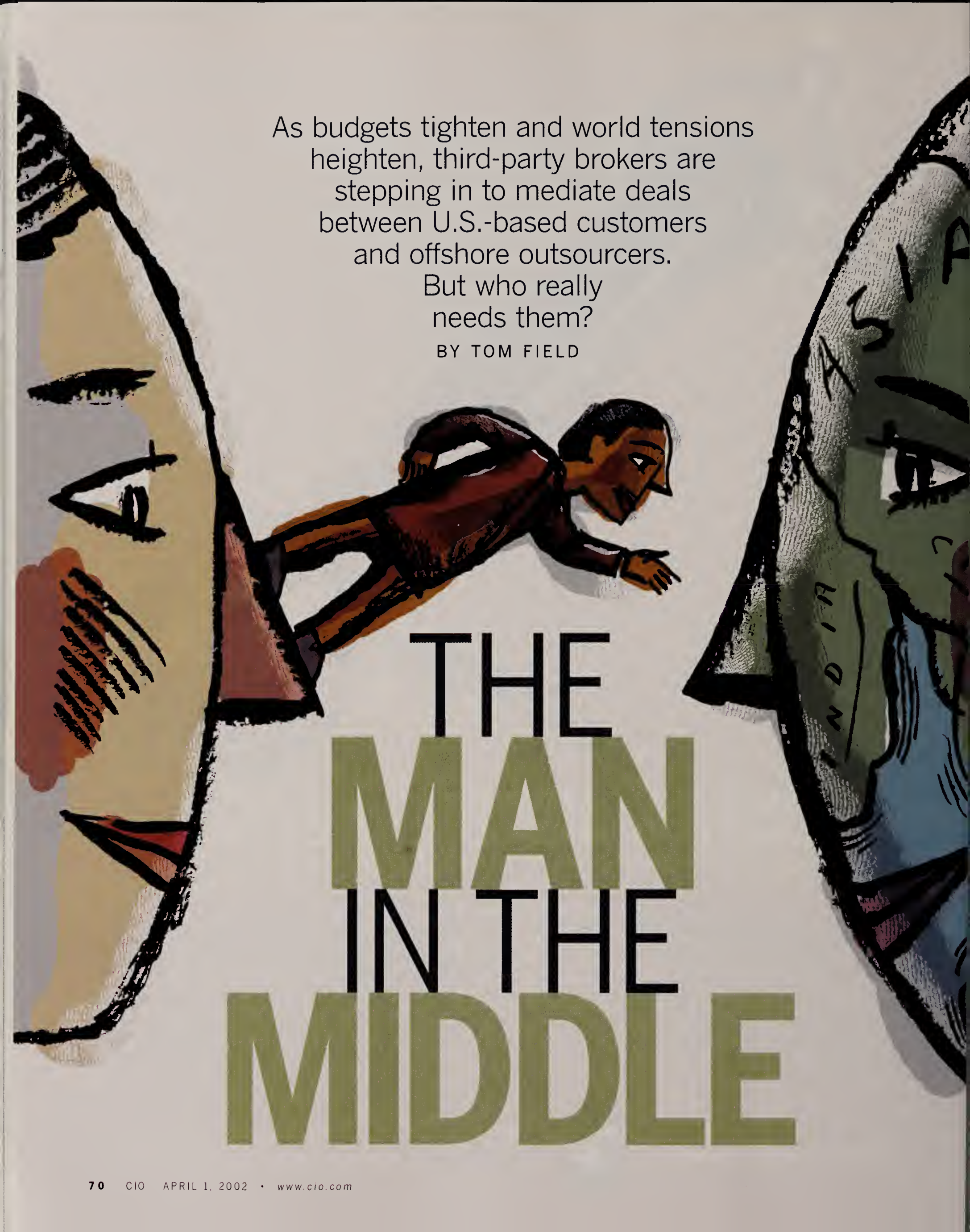
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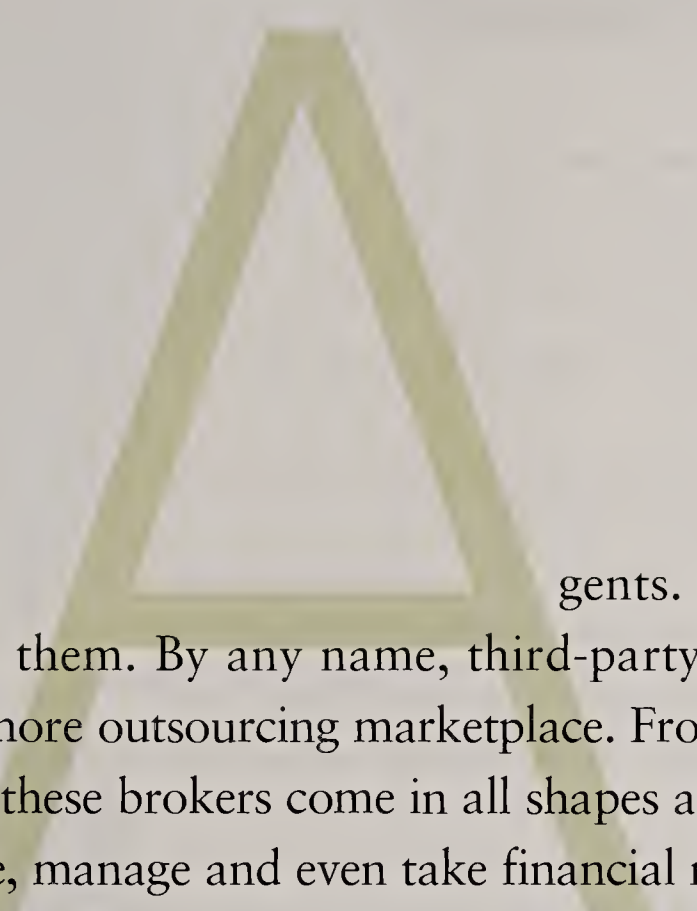
A stylized illustration featuring a man in a red suit with black stripes on the sleeves and legs, running from left to right. He is positioned between two large, stylized faces. The face on the left is yellow with black outlines and features. The face on the right is green with black outlines and features. The man is running towards the green face. The background is white.

As budgets tighten and world tensions heighten, third-party brokers are stepping in to mediate deals between U.S.-based customers and offshore outsourcers.

But who really needs them?

BY TOM FIELD

THE MAN IN THE MIDDLE



gents. Intermediaries. “Pivotal providers,” one analyst calls them. By any name, third-party brokers are now serious players in the burgeoning offshore outsourcing marketplace. From eager-beaver startups to big-name systems integrators, these brokers come in all shapes and sizes but offer the same value proposition: to negotiate, manage and even take financial responsibility for outsourcing projects sent offshore to India, Eastern Europe and other foreign outposts.

In return, they want a cut—maybe even half—of the cost savings CIOs go offshore to achieve.

Where’s the value in giving up savings to get savings? For small to midsize companies new to outsourcing, brokers offer the big benefit of offshore projects—good work done cheap—but without the cross-cultural vendor management headaches. Even some larger companies going offshore for the first time can benefit from a broker if their first consideration is accountability that the work be managed correctly. But to the big, experienced players, the idea of a middleman is as compelling as throwing money out the window.

Clearly, the answer to the new question of whether to use a third-party broker is the age-old “It depends.” There are risks: Brokers vary in offshore experience, and any time you add a middleman to a transaction, communication can get bungled three ways, not just two. There’s also the chance that brokered vendors may be of lesser quality or experience than ones you might attract if you outsourced directly. Key points for CIOs to consider when weighing offshore options are: Know your own vendor management capabilities; do your homework on your

prospective broker’s experience and talent pool; and if you do opt for a broker, be prepared to make a business case that’s rooted less in the hard numbers of cost savings and more in the softer concept of peace of mind.

WHEN HARRY MET SARI

In 2000, when Harry Margolis launched ElderLawAnswers.com, a Boston-based Web portal offering legal advice to senior citizens, he couldn’t afford a big-name Web developer. So Margolis, who is president of ElderLawAnswers.com, hired Providio Technology Group, a Boston-based offshore broker and consultancy, to outsource the work to less-expensive developers in India. Beyond matchmaking, Providio managed the project from beginning to end, relieving Margolis of the burden of having to

learn outsourcing on the fly. “We’re just too small an operation to think about [going offshore directly],” Margolis says. “For us, the [broker] model makes a lot of sense.”

But even the presence of a broker doesn’t guarantee success—particularly when communication issues arise, as they do in any outsourcing relationship. Margolis’s project almost fell apart over the initial vendor’s inability either to understand or perform the tasks requested through Providio. “We’d give [the vendor] a list of things to get done, and half would, half wouldn’t,” Margolis says. “And then there’d be a couple of things added that we hadn’t even talked about.” Providio was unable to improve the relationship and was forced to replace the vendor with a much more responsive (also Indian) company, a job Margolis didn’t have to do.

For larger companies that have outsourced at home but not abroad, brokers can bring knowledge of the offshore marketplace and accountability for making sure the job gets done right. These were the qualities sought by Rino Bergonzi, CIO of Basking Ridge, N.J.-based AT&T Business Services, when he started looking offshore for application development services in 1999. After considering direct offshore

Reader ROI

- ▶ Find out why you might consider a middleman for offshore outsourcing
- ▶ Determine if your project is right for a brokered offshore deal
- ▶ Figure out if the cost savings are still there if you go with a broker offshore

Outsourcing

options, Bergonzi opted to outsource through IBM Global Solutions, which operates its own offshore facilities and partners with foreign vendors. His rationale: AT&T had a long-standing business relationship with IBM, and Bergonzi felt more comfortable venturing offshore through a partner he knew and trusted. "I lose some cost savings," he says, "but I hold IBM totally accountable for the work. If I went [offshore] directly, I wouldn't have the same comfort level."

THE MIDDLEMAN COMETH

The offshore outsourcing marketplace is roughly a decade old, but brokers have emerged only in the past two years—the result of early adopters monopolizing the services of the top offshore vendors, says Cambridge, Mass.-based Forrester Research Analyst Christine Spivey Overby (who coined the term "pivotal providers," and who has been a major proponent of offshore brokers).

"There's a real drop-off in quality between tier-one and tier-two providers," Overby says, citing unpredictable costs, spotty telecommunications infrastructure and nascent business practices at the secondary vendors. "If you're a GE or a J.P. Morgan [two big-spending offshore pioneers], you're going to get on the radar screen [of a tier-one vendor]," she says. "But if you're new to the marketplace and the tier-one dance cards are full, that could lead to risks that are intolerable." By engaging a broker, Overby says, a customer that is new to the offshore market benefits from the experience of an agent who knows how to select and manage offshore vendors, who's willing to act as a mediator and legal resource, and who will accept financial responsibility for delivering the outsourced goods. Another consideration: Going offshore through a U.S.-based broker may ease the concerns of business executives wary of dealing directly with a vendor in some of the world's more volatile corners.

While today brokered deals are outnum-

bered roughly 2-to-1 by those managed directly by customers, Overby says that by 2005 the flood of new customers entering the marketplace (and the resulting scramble to lock in the biggest and best vendors) will result in 64 percent of offshore contracts being managed by third-party brokers.

The startup brokers that come to the marketplace with varying levels of offshore experience are attracted by opportunity—they see a lot of first-time offshore customers who need global guidance. "The Fortune 50 go offshore directly—they're already global," says Rob Linder, president and CEO of Providio, which was founded in 1999. "But there are only 50 of those guys. The rest are going offshore project-by-project and wondering, Who do I go with?"

The big-name outsourcing vendors now getting into the offshore brokerage business—IBM Global Services and PricewaterhouseCoopers among them—have been dragged ("kicking and screaming" may apply) into the offshore marketplace. These companies, which typically have competed against the offshore vendors, now find their own customers demanding offshore options—and the lower pricing that comes with it. And if the big-names won't provide them, the customers will go elsewhere. While offering offshore services—or broker-

Broker Basics

Brokers come in **THREE** flavors:

SMALL STARTUPS such as Providio are focused on delivering offshore services to small to midsize enterprises that have little or no outsourcing experience.

BIG-NAME OUTSOURCERS such as IBM Global Services simultaneously develop their own offshore capabilities and leverage partnerships.

SYSTEMS INTEGRATORS include companies such as Deloitte Consulting, which is delivering offshore services through a partnership with Indian vendor Mastek, a tier-two vendor seeking greater penetration in the U.S. market.

IT Salary Comparison

Wonder where the cost savings are coming from? It starts with the base programmers' salaries.

Country	Base Annual Salary (US\$)
CHINA	\$4,750
INDIA	\$5,850
PHILIPPINES	\$6,550
RUSSIA	\$7,500
INDONESIA	\$12,200
JAPAN	\$44,000
UNITED STATES	\$63,000

SOURCE: ABERDEEN GROUP, NOVEMBER 2001

ing them—at offshore prices reduces the profit a company such as IBM typically makes, the vendor's hope is that its customers will reinvest their cost savings in additional business with the vendor.

AT&T is one of the companies that drove IBM into the offshore marketplace. Two years ago, amid budget cuts, Bergonzi decided to send 38 percent of his application development work (the work of 75 to 100 people per month) offshore by the end of 2001. He considered going offshore directly, but backed off because he didn't have any experience with the vendors. But he did have experience with IBM—AT&T is in the middle of what is reportedly a seven-year, \$900 million outsourcing contract with Big Blue—and it didn't take much pushing to get IBM to develop offshore resources for him. "When you're a big enough customer, you are able to drive customer service," Bergonzi says. Today, in part he has attained his 38 percent goal, and he is realizing across-the-board cost savings of at least 30 percent owing to outsourcing.

"I REALLY DON'T SEE THE NEED"

Some industry experts share Overby's optimism about the emergence of brokers in the offshore marketplace. Stephen Lane, research director of IT services at Boston-based Aberdeen Group, and Lisa Stone, vice pres-

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Outsourcing

ident and research director at Gartner, both see the model benefiting small to midsize companies. "If you can get someone to take care of [legal and vendor-management] issues and still get cost savings, it works," Lane says. However, others denounce those intermediaries as more hindrance than help. "I don't really see the need [for a broker]," says Howard Lackow, senior vice president and director of outsourcing services for The Outsourcing Institute, an outsourcing professional association in Jericho, N.Y. The competition among offshore vendors is hot enough that top-notch offshore services and rates are still available to all comers in direct engagements, he says, and he doesn't see the added value of indirect vendor management. "I would not recommend to any of my clients that they have someone else manage their vendors," Lackow says.

Shaw Pittman is a law firm based in Washington, D.C., that specializes in outsourcing deals. Michael Murphy, partner with Shaw Pittman's Los Angeles technology group, believes even the tier-two Indian ven-

dors have solid enough résumés that there's no need for customers to worry about their service levels or stability. India is far and away the biggest offshore outpost. "Indian companies have excellent credentials—there is no compelling case to say you need an account manager sitting on top of an Indian [firm] to get the job done right," Murphy says. "With a 30 to 50 percent costs savings, [a CIO] can afford to add some overhead, but it would be wrong to think there's any sort of obvious case to introduce a third-party to manage these relationships."

Also, just because a broker has a big name in the United States in outsourcing doesn't mean it has big-time offshore expe-

rience or access to top-notch skills. "Many of the U.S.-based pivotal providers are just getting an offshore outsourcing capability," notes Marty McCaffrey, cofounder of Global Outsourcing, a Salinas, Calif.-based offshore consultancy (but not a broker). While IBM has a good seven years of offshore experience in India and elsewhere (as much or more than many veteran offshore customers), companies such as Accenture and EDS have only just gotten their feet wet in India within the past two years. Those companies may take a year or more to establish themselves in the Indian marketplace, where they have to compete for talent with the well-established home teams. "It's not Presto! you have a great offshore facility and now you're a great offshore services provider," McCaffrey says.

"I WOULD NOT RECOMMEND TO ANY OF MY CLIENTS THAT THEY HAVE SOMEONE ELSE MANAGE THEIR VENDORS."

*—Howard Lackow, SVP and director of outsourcing services,
The Outsourcing Institute*

Offshore Outsourcing Primer

New to offshore? Here's where to start.

WHY GO OFFSHORE? Since the mid-'90s, major U.S. companies have been sending significant portions of their application development work offshore—primarily to vendors in India, but also to emerging IT services companies in China, Eastern Europe (including Russia), Ireland, Israel and the Philippines. The lure: good work done cheap. A programmer who earns as much as \$63,000 per year in the United States is paid as little as \$4,750 overseas. Companies can easily realize labor cost savings of 30 percent to 50 percent through offshore outsourcing and still get the same—if not better—quality of service.

WHERE OFFSHORE? Developed and developing countries throughout Europe and Asia offer some IT outsourcing services, but most are hampered to some degree by language, infrastructure or regulatory barriers. The first and by far biggest offshore marketplace is India, whose English-speaking technocrats have built the IT services business into a \$4 billion industry. Infosys, NIIT, Satyam, TCS and Wipro are among the biggest Indian IT vendors, each now with a significant U.S. presence.

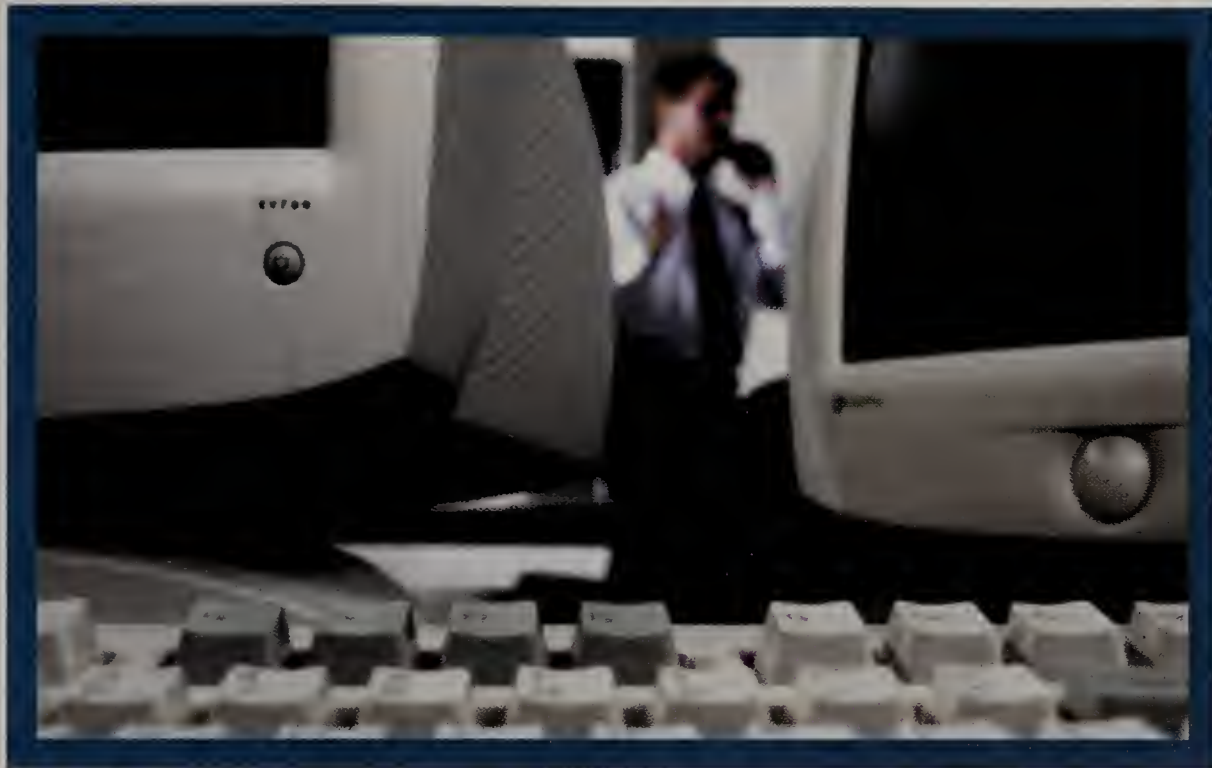
WHAT'S THE OFFSHORE OUTLOOK? Stephanie Moore, a vice president with Giga Information Group in Cambridge, Mass., says a 23 percent growth in offshore outsourcing is expected this year. Forrester Research Analyst Christine Spivey Overby, who recently surveyed 45 IT executives at companies having \$1 billion or more in annual revenues, found that 44 percent outsource offshore today, with the remaining two-thirds of them expecting to go offshore by 2003. Squeezed to get more bang from their tight IT budgets, CIOs are beginning to look at "near-shore" options in Mexico, Canada and on American Indian reservations.

—T.F.

IT'S ALL ABOUT ACCOUNTING

For most CIOs weighing offshore options, the bottom line is the bottom line—what's the deal going to cost, what's it going to save, and who's going to be held accountable?

Rates for offshore outsourcing vary depending on supply, demand and the relative heat of competition in the marketplace. But given the variables, offshore outsourcing saves customers anywhere from 20 percent to 50 percent of what it would cost to do the work here in the United States. This cost savings is built almost entirely into the lower labor costs overseas (see "IT Salary Comparison," Page 72). A broker will skim up to half of that cost savings off the top of the deal, reducing the customer's discount to between 10 percent and 25 percent of U.S. costs. That's still a significant savings over



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doing it yourself—but maybe not enough for CIOs who don't want to surrender any savings or control.

Kurt Woetzel, executive vice president and CIO of The Bank of New York, has been outsourcing application development directly to Tata Consultancy Services (TCS) in Mumbai, India, for a little more than two years, and so far he's realized a 20 percent to 30 percent reduction in costs. And although he was new to the marketplace when he first signed with TCS, he never considered venturing offshore through a broker. The main reason: total control. "If something

goes wrong, management isn't going to care that I hired someone to [manage offshore accounts] for me," Woetzel says. "Besides, we think we're pretty good cost managers ourselves. We don't want to put that responsibility in someone else's hands."

"IT'S ALL ABOUT THE MONEY. AT THE END OF THE DAY IT'S THE 30 TO 50 PERCENT SAVINGS THAT GETS THE CFO'S ATTENTION."

—Michael Murphy, partner, Shaw Pittman

And remember: Getting your feet wet with a broker doesn't mean you have to stick with a broker. AT&T's Bergonzi, a broker proponent, is starting to dabble in what he describes as "a little" direct application development work—\$10 million worth—with TCS and another top Indian vendor, Wipro. And he may expand those solo efforts later this year. "I'm impressed with the quality of work in India," Bergonzi says, and he also respects the size and capabilities of the vendors, which in their own right could be called the GE and IBM of India. "I have to deal with solid, reliable firms," Bergonzi says. "I don't want to work with smaller firms that might be less reliable, even if I could get a better rate from them."

Do You Need a Broker?

Before deciding whether to go offshore directly or through a broker, check off the statements that seem most true about you.

1. What's your outsourcing experience?

I can write an SLA in Bengali.10 points
My last company had an outsourcing deal...somewhere.5 points
What's an SLA?0 points
If you've never outsourced before, then an offshore engagement might not be the best way to learn—not without help from an experienced partner, at least.

2. How well can you manage overseas vendors?

I always keep my watch set to Bangalore time.10 points
I know a good dry cleaner at O'Hare.5 points
The wife and I went out for Italian last night.0 points
All outsourcing deals require strict vendor management, but offshore accounts need special care from people who are comfortable working with different time zones, cultures and languages.

3. How critical are cost savings to the success of your offshore project?

Cost savings are my greatest concern.10 points
Well, yeah, it would be swell to save some money.5 points
Saving money isn't my job.0 points
Typically, offshore deals save customers 30 percent to 50 percent in labor costs, but half these savings could be gobbled up if you go through a broker.

4. Are you looking for a long-term offshore engagement?

I'm looking for an ongoing relationship with my vendor.10 points
I think it would be nice to have an ongoing relationship, but I'd rather not commit.5 points
Can you just design this one webpage for me?0 points
The tier-one vendors are looking for long-term deals, not one-project stands. Your intentions may decide whose interest you attract.

If your score is 30-40 points: Do it yourself. Go directly to the nearest offshore vendor. If your score is 20-30 points: Maybe you should consider using a broker—at least until you get a better feel for the lay of the land. If your score is less than 20 points: You're not ready to venture offshore alone.

CIO.com

Read more about outsourcing in our **OUTSOURCING RESEARCH CENTER** at www.cio.com/outsourcing.

Still, when most executives look offshore, money isn't just a factor, it's the *only* factor. And that's the key to making the broker or no broker decision: Is outsourcing a project and its vendor-management headache worth the cost savings you'll lose by going offshore via an intermediary? For Margolis of ElderLawAnswers.com, the answer was yes. But that's not true for everyone. As Shaw Pittman's Murphy says, "It's all about the money. You can make all the arguments about quality of work and access to skills, but at the end of the day it's the 30 to 50 percent savings that gets the CFO's attention." **CIO**

What's your offshore strategy? Tell Executive Editor Tom Field at tfield@cio.com.

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Like individuals, organizations can become depressed, agitated and dysfunctional. And, like individuals, they can be helped by psychological intervention. Here's a case study of how one company, diagnosed with a problem in authority dynamics, fought its way back to health.

BY STEPHANIE OVERBY

Reader ROI

- Find out how an organization can become neurotically dysfunctional
- Discover strategies for combating organizational depression
- Learn about the leader's role in defining authority in an organization

The air inside the IS department at Millennium Teleservices had become poisonous. "No one looking at our department could tell that we were ready to kill each other," says CIO Leif Maiorini. "But we were ready to kill each other."

By the fall of 1999, the 113-person technology department at this Edison, N.J.-based telemarketing service provider was in the throes of a slow-motion, virtual nervous breakdown. Departments within IS were warring. Ninety percent of the staff was threatening to leave. Revenues were flat. Productivity, according to Maiorini, was half of what it should have been. And no one was looking forward to the looming promotion of then-Vice President of IT Maiorini to CIO, not even the would-be CIO himself. "For the first time in my career, I doubted my ability to have a positive effect on the situation," Maiorini admits.

Self-doubting, dysfunctional departments are nothing new; an industry of consultants, coaches, training institutes and book publishers exists to inspire leaders, empower employees and get them all working together. But Millennium Managing Partner Brian Pasch took a different tack.

He called a shrink.

Christine Truhe, an organizational psychologist based in Summit, N.J., began what she calls an intervention. Known in the organizational development field as "organizational diagnosis" and inside the Millennium offices as simply "the Dr. Truhe thing," it's a process of assessing an organization or a particular business problem by addressing the relationships between individuals and groups.

At Millennium, Truhe encountered a dynamic she says is quite common among family-run businesses seeking to become

more professional, startups that suddenly become successful, merged corporations and previously stable companies experiencing exponential growth. "There are a variety of complex psychological forces that converge in these kinds of situations, but generally the critical element is unclear or competing authority figures," says Truhe. After diagnosing Millennium with a problem in authority dynamics, she prescribed a cure.

And according to almost everyone involved at Millennium, a year and a half and about \$100,000 later, it worked. Productivity and efficiency are up, costs have come down, retention has increased and, most important, people can breathe again.

Hitting Bottom

It had taken some time for the 39-year-old Pasch—who in 1993 joined Millennium cofounders Scott Pasch (his younger brother) and Dave Keezer as a managing partner and the company's first IS employee—to see that there were real issues in the department. "I started seeing a lot of professional people, who were good at what they did, not getting along," says Brian. "I tried saying, 'Hey, you guys are adults. Go work it out.' That didn't work." He encouraged his group of eight IT managers to attend workshops and courses in communication. To generate team spirit, he tried taking them out to New York Yankees baseball games in the spring and summer and New Jersey Nets basketball games in the fall and winter. He looked into setting up a

ANGST

Christine Truhe,
organizational
psychologist:

"Organizational psychology is about how groups of people within a system interrelate. If you've ever seen a quality chart with boxes representing tasks, we address the space between the boxes."



Leadership

lending library on leadership and management topics. Nothing worked.

The department had started its downward spiral in 1995 shortly after Pasch hired Maiorini as a vice president in IT from competitor RMH Teleservices in Philadelphia, with the unofficial, unstated, but widely understood intention of eventually naming him CIO, which he did in 1999. "The goal was always that we would build the department up to a fairly significant size and I would take over," the 35-year-old Maiorini explains. It was pretty clear early on that he considered me the second in command."

Pasch was eager to get out of day-to-day IS management to focus on more strategic initiatives. Millennium's IS department, which Pasch had built person by person, had grown from three to 113 in five years, and the larger company was poised for still more growth. (According to various sources, the privately held Millennium's revenues were \$35 million in 2000.) "I always felt that I was a confident business leader and a successful businessperson, and now I spent a lot of my day refereeing," Pasch recalls. "Everyone thought another person was sabotaging him. There wasn't a whole lot of trust.

"It was like the wheels were falling off the cart while we were going down this big hill, with the hill being the company's growth."

Things had gotten so bad that one IT manager came out of a meeting with his fellow vice presidents saying that he felt like he had been run over by a bus. Someone bought a toy bus for the conference room and "giving someone the bus" became a Millennium euphemism for flaming another employee. Before long, employees were taking the bus all day long rather than doing their work. "I have copies of my e-mail to prove it," says Travis Rogers, who joined the company as a director of call center technology solutions in 1997 (he's now senior vice president of systems development). Rogers says he spent up to four hours a day just responding to vicious missives.



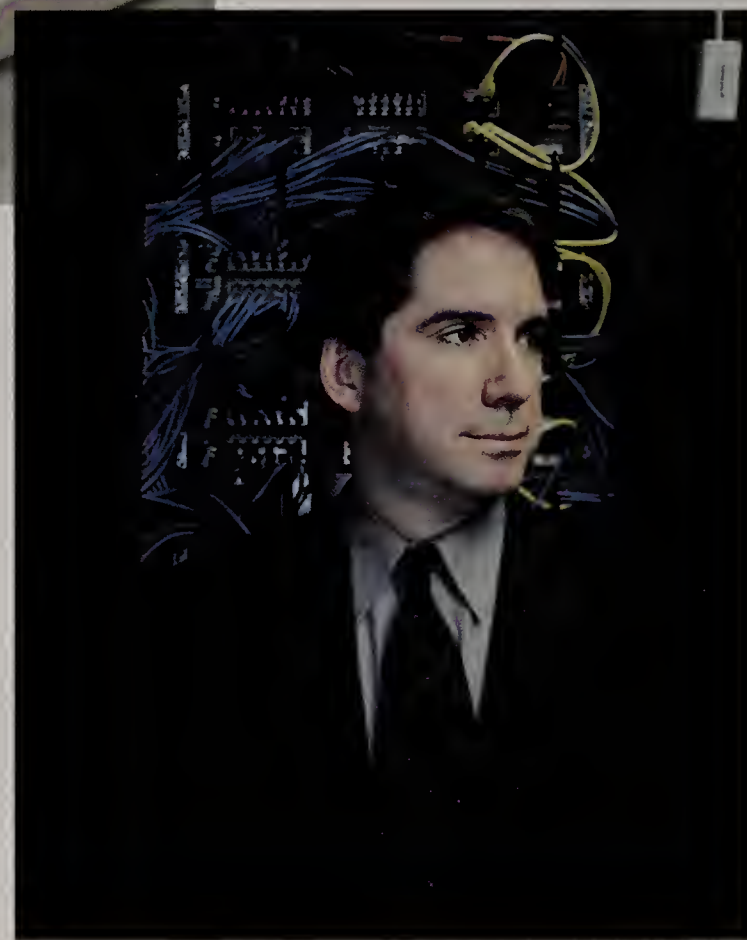
The answers to the psychologist's survey were startlingly straightforward. The leadership team thought Managing Partner Brian Pasch (below) was brilliant, charming, likable and indecisive. They viewed CIO Leif Maiorini (left) as a robot.

By 1999, Pasch knew that his vision of stepping back from IS in order to focus on streamlining Millennium's expanding operations (since 1993 the company had grown from one to 35 call centers) was growing dim. "I knew that if I didn't get some outside help, I couldn't properly transition this organization without bloodshed," Pasch says.

Pasch talked to a friend and psychologist about his concerns, and that friend gave him Truhe's number. "He said, 'If you're feeling like you don't have the tools to handle this, that's what an organizational psychologist is for,'" says Pasch. He called Truhe, admittedly with some trepidation.

"My personal beliefs said that it's a very healthy thing to go to a psychologist when you're struggling with life or personal issues. But not everyone in the business world shares that view," Pasch says. "I was afraid someone would write the process off and say, 'I'm not talking about how I feel inside.'"

Truhe overcame Pasch's misgivings by explaining her work in business terms. "I don't 'shrink' organizations," she says. "Organizational psychology is a field of science that is based on literature about how



groups of people within a system interrelate. If you've ever seen a quality chart with boxes representing tasks, we address the space between the boxes. Between the tasks there are relationships—sometimes multiple relationships—that affect productivity. That's where we intervene."

First, she talked with Pasch and CIO-to-be Maiorini to get an idea of the problems in the IS department and the personalities involved. She also asked them about their past experiences in corporate groups in much the same way a personal psychologist might ask about a patient's family.

Maiorini had been a CIO for four years at

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his previous company and had been in managerial roles since he was in his twenties. Millennium was Pasch's first leadership position, and most of his professional experience had been in more individual pursuits, ranging from land surveying to engineering. Together, the three decided that an intervention was warranted. Maiorini realized that his ideas for changing the organizational structure within IT would not be enough to fix people's unhappiness. "After talking to Chris [Truhe], I realized I couldn't just rearrange all the boxes on the organizational chart to fix our problems. It might make it easier for people to do their work, but the core problems existed in the connections between the people," Maiorini says.

A Company on the Couch

Truhe began by distributing a questionnaire to the eight IT managers who would eventually report to Maiorini. The questions ranged from "What is your understanding of the mission of IS in Millennium Tele-services?" and "What are your responsibilities?" to trickier items such as "What are Brian Pasch's weaknesses?" and "What are the most significant business problems within the company?"

The answers were startlingly straightforward. The leadership team thought Pasch was brilliant, charming, likable...and indecisive. They viewed Maiorini as a robot.

"When a peer was plucked from their midst, identified as special, and elevated, it activated feelings of competition for the source of affection and power: Brian," says Truhe. "So they attributed irrational amounts of negative comments to Leif."

As a way to manage their anxiety, the IS group had cast Pasch as the good guy and

"I had tried to have a very personal, intimate relationship with my direct reports. I denied the fact that I had any influence. Truhe helped me realize that as much as I wanted to be their peer, I never would be."

—Managing Partner Brian Pasch

Maiorini as the bad guy. Maiorini's fellow vice presidents, all of whom had been hired by Pasch and reported directly to him, were worried about their positions in the new regime. But more important, they felt abandoned by Pasch, who they considered more a friend than a boss.

"When Leif first came in, Brian would say things like, 'I'm hiring another Brian,'" remembers Inna Zelepukina, Pasch's first hire, who had risen to the rank of vice president. "It was hard for us to imagine there being another Brian."

Truhe met with Pasch and Maiorini privately to present the results of her survey and explain the issues underlying the responses. "Although there were things in there that made me think, 'Wow, that is just messed up,' I could understand it," says Maiorini. "They just saw me as the wedge between them and Brian."

For Pasch, the comments cut even more deeply. "I felt terrible for Brian because they just *creamed* him," says Maiorini. "There were things in there like 'Brian doesn't know what he's doing,' 'He's making lots of mistakes now' and 'Brian doesn't like me anymore.' You could tell that there was this emotional bond between him and certain people and they were reacting to what they saw as a betrayal of that bond."

Pasch and Maiorini took a deep breath and decided to air the survey results in a meeting with the IS leadership and begin the intervention. The vice presidents were skeptical.

"They thought we were going to lie down on couches and talk about our feelings or something," Pasch says with a smile. "Initially, I didn't know what to think of the process or what to think of [Truhe]," says Rogers. But Rogers did know what he thought of Pasch: he played favorites, undercut Maiorini's authority and, most

important, abhorred confrontation. "And in this situation the one thing he hated to do most [confront people] was the one thing he *had* to do. So we needed someone here to guide us through that," Rogers says.

Truhe explained to the group that for the sessions to work they would have to learn a new way of communicating. "When I gave them feedback it was important to discuss it in a way that allowed them to look at the group as a whole rather than trying to focus on who said what," Truhe says. "In any business the essential unit of economic value is the group, not individuals. When you intervene at the group level, you maximize your ROI in organizational development."

For the first six months of the organizational discovery process, Truhe met with the team once a week for three hours, talking about each theme she had culled from the discovery process. Among these themes was the anger over Maiorini's promotion, intra-group conflict during meetings—some dominating, others arriving late, Pasch looking distracted—and anxieties about job stability. The point was to get the group to a point of common understanding about the way things were, good or bad.

"Organizational diagnosis is like an annual physical," says Clayton Alderfer, director of organizational psychology at Rutgers University, where Truhe is a visiting faculty member. "It doesn't presume that there's anything wrong." But the group agreed that they were a sick department, and Truhe stuck around for another year to work on the "treatment." The IT leadership group continued to meet weekly until last February.

The Authority Thing

One of the first things that surfaced in the meetings was that Pasch's desire to be pals with his direct reports—whom he passed on

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How to Heal Thyself

Organizational psychologist Christine Truhe's laws for understanding organizational dynamics

THE ONE AND THE MANY If one person has the courage to express a controversial thought or feeling, someone else likely shares that view.

TRICKLE-DOWN THEORY If their leaders are dysfunctional, employees will be dysfunctional. If two managers can't get along, their teams won't get along. If the leaders change for the better, their employees will change as well.

THE GREATER GOOD The fundamental unit of economic value in a company or department is the group, not the individual. If you make changes at the group level, you maximize the ROI.

DOUBT NOTHING If two individuals express opposing and contradictory viewpoints, both are likely to be true. Resist the urge to nullify either one.

to Maiorini when he announced Maiorini's appointment as CIO at Millennium's 1999 Christmas party—was the source of much of the trouble.

"I had tried to have a very personal, intimate relationship with my direct reports. I wanted to be perceived by them as a peer and I denied the fact that I had any influence," says Pasch. "One of the first things Chris [Truhe] helped me realize was that as much as I wanted to be their peer, I never would be."

Pasch had been in denial, refusing to acknowledge the impact his authority had on his employees.

"Like the vast majority of leaders, he didn't realize his own power," explains Truhe.

Maiorini and Pasch also had been meeting with the vice presidents separately—another source of confusion. Unknowingly, the two often presented conflicting ideas or instructions. Managers thought it appropriate to go to Pasch to complain about Maiorini and vice versa. The result: Pasch and Maiorini were inadvertently contributing to the perception that there was a split between them, a notion that encouraged the directors to cling to the fantasy that Maiorini's promotion could be derailed. Also, in an effort to stay close to his former direct reports by remaining

available to them, Pasch was in effect holding onto the power he claimed to be passing on to Maiorini, undercutting Maiorini's authority and thereby feeding the unease in the department.

"It was clear that [Pasch and Maiorini] needed to unify," says Truhe. "They had to be physically present together with the group, disallow comments from the VPs to them about each other, and establish a chain of command with Leif at the top."

As a start, they decided to begin meeting, with Leif leading and Brian contributing. "As a result, the managers saw that Brian and Leif were a team," says Truhe. "They learned that they could still talk to Brian, but they couldn't go around Leif to talk to Brian. The group started settling down. The anxiety was reduced. And Leif started to become a very effective leader."

No Slips

Two years after their first organizational discovery meeting, Maiorini and Pasch say the results go beyond everyone just getting along. With "giving the bus" no longer common parlance, the company is much more efficient. Productivity, says Maiorini, is up 40 percent, based largely on reductions in the IT budget that would not have been possible in the preintervention environment.

Before, each director of IS wanted as many people reporting to him as possible, believing that gave him an advantage in the never-ending competition for Pasch's attention. Once the war ended, the directors stopped resisting cuts, and the six people who worked full-time loading and cleaning call lists were reduced to four, and the eight employees who worked to process the results of a day's calls are down to three. The 113-person IS department has been trimmed to 90.

"We perform more support functions and spend \$1.5 million less in people costs," Maiorini says. And telemarketing hours—a measure of size in the industry—increased 50 percent in 2001 after stalling in 1999. Pasch says Millennium is now the fifth-largest telemarketing services organization in the nation.

But Truhe's intervention, although clearly good for Millennium, was, in fact, hard on some people. One VP was asked to leave after it became clear that he could only see the meetings as an arena for finger-pointing and angry confrontation. "Two people fell out during the process," says Maiorini. "But the thing is, it could have been *everybody*."

The IS leadership team and Truhe think the changes in the atmosphere at Millennium will be lasting. "Often businesspeople want these off-the-shelf things that make it look like they made a change because they spent the money. Ultimately, nothing changes," Truhe says. "But when you do something like this that's slow and steady over time, you make fundamental shifts and you sustain them."

"This is not something you slip back into. Nobody was watching out for this before," says Rogers, noting that he hasn't seen that toy bus in the conference room in months. "Before we were a group of managers, but we weren't a management team. Now that we've experienced the benefits of being a team, *no one* wants to go back to the way things were, and *everyone* is watching out for it." **CIO**

Air your leadership concerns to Senior Writer Stephanie Overby at soverby@cio.com.

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Power Pool

Distributed processing gets an updated look as vendors go for the grid

BY ERIC BERKMAN

IN EARLY 2000, Cereon Genomics had a serious situation on its hands: It was running out of computing power.

A genomics company based in Cambridge, Mass., Cereon combines genomics research tools with high-speed computing to discover nature's

best genes for enhancing farmers' crops. Historically, Cereon, established in 1997 as a subsidiary of St. Louis-based agriculture products provider Monsanto, ran gene-discovery applications on its largest mainframe. But advances in genomics tools and lab processes caused Cereon's

Edited by Christopher Lindquist. Send your thoughts and ideas for future columns to clindquist@cio.com. Read Lindquist's Tech Tact column every Monday at www.cio.com.

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data production to expand at a fantastic rate, until it became too much for the mainframe to handle. "We were awash in terabytes," says Mark Trusheim, Cereon's co-president and COO. "We have to discover our products quickly and be first to market, and our ability to understand the raw data created by all our genomics tools became a huge bottleneck in our research pipeline."

Cereon needed more computing power—fast. So it tapped into its existing Unix server architecture, bought a bunch of new boxes and networked a grid of processors in Cambridge and St. Louis into a virtual supercomputer that company researchers could use to submit jobs from their desktops. Specialized software from Platform Computing, a Markham, Ontario, company, broke large jobs into smaller computing tasks, distributed them among the CPUs in the grid and reassembled the results into a finished product. The grid was up and running by mid-2000, and Trusheim says it's been a huge benefit. "It's helped us optimize the use of the hardware we have, and we see less need to add," he says. "We've been saving millions of dollars of IT hardware cost over the last two years

as we automatically load balance across processors and now physical data centers."

Cereon's solution is not completely out of left field. The idea behind grid computing (historically known as distributed computing; see "Grid Computing...Defined?" on this page) has been around for years. It simply means submitting massive jobs into a dispersed network of computing resources to harness idle processor cycles for additional computing power on demand. Until the past couple of years, however, distributed computing has been primarily the province of academia and nonprofit research. But its new form, grid computing, is starting to emerge in a commercial context as well. Early adopters, including biotech companies, pharmaceutical makers and chip manufacturers, are building their own grids to handle complex problems. And once the technology matures—and if CIOs find applicable uses—adoption of grid computing will be more widespread, both within and among enterprises. Grid proponents' ultimate goal is a worldwide grid, similar to the electric power system, which users can access over the Internet through service

providers on a pay-as-you-need basis.

How It Works

Grid computing uses networked clusters of CPUs connected over the Internet, a company intranet or a corporate WAN. The resulting network of CPUs acts as a foundation for a set of grid-enabling software tools. These tools let the grid accept a large computing job and break it down into tens, hundreds or thousands of independent tasks. The tools then search the grid for available resources, assign tasks to processors, aggregate the work and spit out one final result. Grid toolkits also contain middleware that enables a diverse, multivendor array of hardware to accept assignments and handle all the same applications.

CIOs can realize significant benefits from building a grid, or so say grid solutions providers. Ian Baird, Platform's chief business architect and corporate grid strategist, says CIOs are under incredible pressure to increase ROI in IT because they've already spent an incredible amount of money, and—particularly during a recession—companies are reluctant to spend more on additional computing resources. "The grid is a way to get maximized utilization of existing resources without spending millions of dollars on hardware," he says. For example, Baird claims that one Platform customer, a bioinformatics company, planned to spend approximately \$3 million on new hardware to expand its computing resources. Instead it spent around \$150,000 to install a grid, and it no longer needs to buy the new hardware.

Despite the potential benefits, grid-ready applications remain a rare bird. The technology best serves problems that are computationally intensive using algorithms that developers can break down into discrete computational units, such as genetic research where scientists must mathematically analyze thousands of genes in combination to find matches. And that's not a task most corporations face.

Grid Computing...Defined?

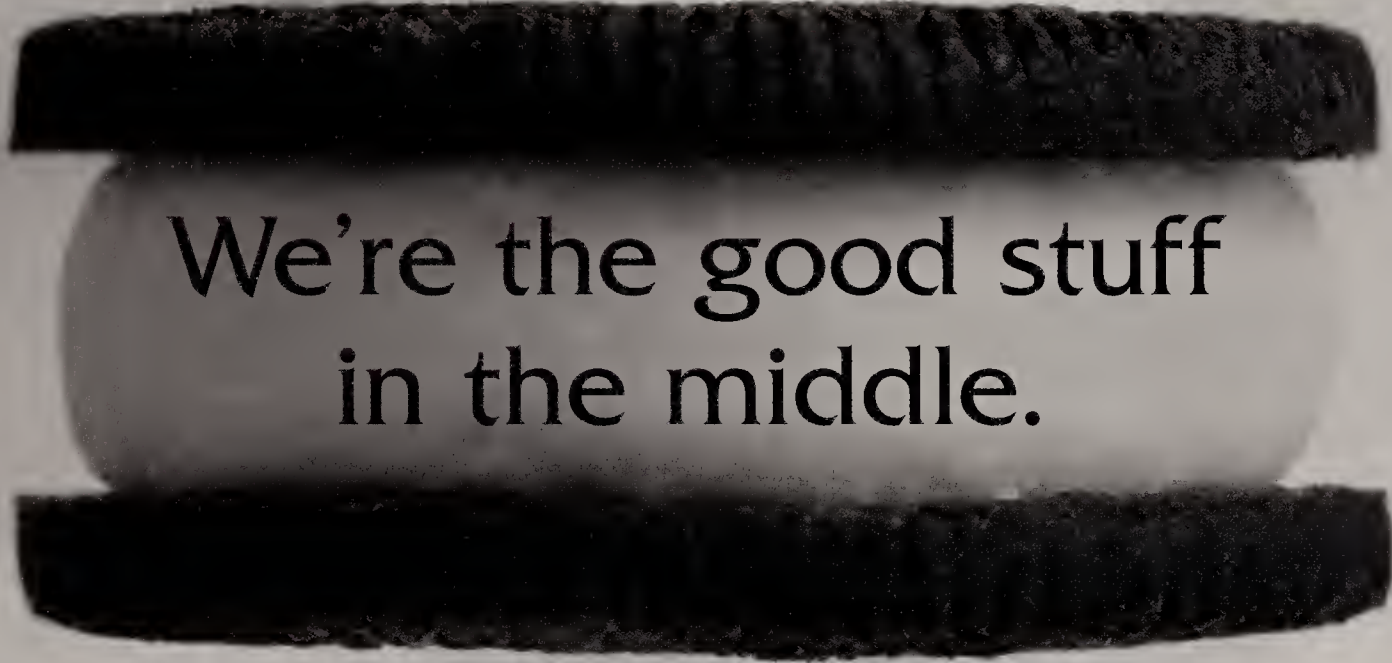
Grid computing means different things to different people

DEFINING GRID COMPUTING is like throwing darts at a dragonfly. That's because there are as many definitions for grid computing as there are people to ask about it.

For example, some observers say grid computing is just a fancy new name for the well-established concept of distributed computing. "I think they're pretty much synonymous—the ability to distribute a computational task over some network of connected computers," says Robert Batchelder, a research director at Gartner in Stamford, Conn. But when pressed, Batchelder gives a subtle distinction: "With grid computing, the computational modules are very similar—that is, a computational task is broken into uniform subdivisions. With a distributed model, they're irregularly shaped."

But Ian Foster of the Argonne National Laboratory in Argonne, Ill., coleader of the Globus Project, an open-source grid computing initiative, says distributed computing is a scaled-down subset of grid computing. He defines distributed computing as harnessing desktop PCs within an enterprise to make a single resource, while grid computing involves diverse hardware that can extend beyond the enterprise.

Observers do agree on one thing: Grid computing involves disparate resources working on parts of one big computing problem. And if you're a CIO with that big problem, that should be enough to at least get you looking at grids as a solution. —E.B.



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Power Pushers

Despite its seemingly limited applicability, grid computing has generated considerable buzz. A number of major hardware vendors, including Compaq, Hewlett-Packard and IBM, have announced commercial grid-computing initiatives in the past year. This is part of a big push for them to sell more hardware, according to Robert Batchelder, a research director at Gartner in Stamford, Conn. The vendors realize that when companies install their own grids, they're taking advantage of resources they already have. But—like Cereon—they'll probably still need to buy more hardware in the end. And with products available from companies such as Platform and Entropia as well as the government-funded Globus Project (which makes the Globus Toolkit—a free, open-source set of grid tools), it's now easier for companies to create grids. So the big vendors aren't about to miss out on the opportunity to sell hardware loaded with these tools. "A company will throw iron at a problem, and some-

Microsystems released Sun Grid Engine, free software that helps companies set up "cluster grids," or grids that live in a single location. In November 2001, Sun announced the no-cost beta release of Sun Grid Engine, Enterprise Edition, which it will eventually sell to help companies build "campus grids" that link computer resources in several departments or locales.

Meanwhile, some vendors are striving for a utility model of grid computing. IBM announced in August that it plans to let companies—sometime in 2002—buy processing power instead of building their own grids. Though Dave Turek, vice president of emerging technologies for IBM, declined to describe the exact configuration of such a utility, he indicated at the time of the announcement that customers might tap into processing power at 50 IBM data centers around the globe. Meanwhile, HP is rolling out a service model called Utility Data Center, which it claims will be able to run enterprise and Web apps, such as those used by online retailers, as opposed to

Despite the potential benefits, grid-ready applications remain a rare bird.

one like IBM doesn't care what you do as long as it's IBM iron," says Batchelder.

Grid bundles seem to be the favored approach. IBM, for example, announced in November that it will deploy the Globus Toolkit on its Linux and AIX servers. Platform announced around the same time that Compaq will package Platform's Grid Suite software on its Tru64 Unix servers and its Linux servers. And in 2000, Sun

the more traditional grid computing tasks. Nick Gall, an analyst with the Meta Group based in Stamford, Conn., says HP's plan is ambitious. "They're trying to address many of the key challenges of grid computing in a very short time frame. There's a significant chance they're setting expectations too high," he says.

The Future

Before grid computing moves into the commercial mainstream, CIOs need to learn more about the technology and its possibilities, and identify ways they can use it. But proponents claim that just about any sophisticated company can find a need for high-volume number crunching. For example, says Gall, companies that engage in weather forecasting, such as insurance

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For more information, visit www.airclic.com.

—Christopher Lindquist

PEER RESOURCES

The grid concept explained

A nontechnical explanation, "WHAT IS GRID COMPUTING," appeared in our sister publication, *Darwin* magazine. To get a copy, go to www.cio.com/printlinks.

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companies and commodities futures brokerages, have supercomputing needs that grids can address. Similarly, financial services companies could use grid computing at the end of each day to make sure their portfolios are balanced with the appropriate risk. "How much would it have been worth to [defunct investment house] Barings to have been able to analyze its entire portfolio and find out what one rogue trader was doing?" says Peter Jeffcock, Sun's group marketing manager for software products in the technical market products group, based in Palo Alto, Calif. "A grid could have helped because this is a huge, compute-intensive task." Jeffcock adds that grid computing can help any company that does its own software development and testing. "You're running weekly, nightly and sometimes daily regression tests. If you could run them over lunch and say, 'Here's what you need to fix in the afternoon,' you could deploy the products much quicker."

But other problems need to be solved before grid computing becomes truly widespread—particularly in the context of inter-enterprise grids, utility models and ultimately a global grid. The biggest issue is security. If you're sharing the grid with other companies—as you share the power lines now—you need assurances that nobody else can get to the confidential information you're throwing into the system. Standardization also remains a challenge. A grid involves sharing distributed heterogeneous resources and bringing together a number of operating systems, vendor platforms and applications. Getting them all to talk will require new protocols. A number of nonprofit groups such as the Global Grid Forum, the Globus Project and the New Productivity Initiative are working on security and standardization issues. But until these issues are worked out, grid computing will likely remain an internal corporate effort. ■

Are you grid-enabled? Let Senior Writer Eric Berkman know at eberkman@cio.com.



UNDER DEVELOPMENT **Security**

Secure Light Streams

RESEARCHERS at Cambridge, England-based Toshiba Research Europe have developed a new type of light-emitting diode (LED) that fires photons in a single, steady stream. The technology could eventually lead to the mainstream adoption of quantum cryptography, a secure form of optical communications that's virtually impervious to hacker attacks.

Many data security experts view quantum encryption as the Holy Grail because nature guarantees its effectiveness. Under the peculiar laws of quantum mechanics, the very act of intercepting a stream of photons barreling down a fiber-optic cable changes the information it is carrying—including encryption data. "The bits themselves are encoded on some property of the photon, such as its polarization or phase," says Andrew Shields, Quantum information group leader.

The only way the system could possibly be defeated would be for a hacker to measure a photon stream and then transmit identically encoded photons down the line to the intended recipient, says Shields. Fortunately, however, single photons have the curious property that the encoded state carried by the single photons cannot be copied faithfully. "If a hacker tries to copy the encoded photons, he would introduce errors that can be detected by the sender and intended recipient," says Shields.

Attempts at using lasers to fire timed single photon streams have failed to work except under strict laboratory conditions. Toshiba, on the other hand, promises that its new LED will work just about anywhere, can be built using standard semiconductor manufacturing techniques and is compatible with existing optical fiber cables.

Quantum encryption's first users will be organizations that require continuous ironclad security, such as banks. But Shields says he believes that Toshiba's relatively simple and inexpensive technology will eventually filter down to smaller organizations and perhaps even consumers looking to safeguard their credit card information. "We know what the challenges are and how to solve them, but it will take a few years," he says.

—John Edwards

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REVISIT

Unified messaging

Getting the Message

The all-in-one inbox may not have been the Holy Grail for communications after all **BY FRED HAPGOOD**

FOR MOST of the 20th century our means of communication were as unchanging as Latin grammar. We sent letters or made phone calls, and that was that, with little variation from one generation to the next. Nobody but science fiction writers sought or even imagined any improvements; certainly the organizations providing those services did not offer any.

Then, during the 1980s, new forms of communications—voice mail, fax, beepers, cell phones and e-mail—suddenly began to appear, penetrating quickly in the commercial world. By the early '90s, the background assumptions about the nature of communications appeared to have reversed themselves: now it was change that seemed normal. The marketplace was packed with vendors promot-

ing their candidates. The only questions were which changes would come next, and how quickly?

Perhaps the leading candidate for the next big thing in communications was called unified messaging, also known as integrated or universal messaging. Exactly what the idea meant in practice depended on the constituency. To users, unified messaging meant retrieving and processing every sort of message from one address and over one connection. To engineers, it meant a world in which the technical meaning of every message-type lived within a single family of standards. To a CIO, it offered all messaging functions with a single procurement cycle and vendor. To the CEO, it promised responsibility for all communications in a single



Videoconferencing

PREDICTIONS

Year of the Digital Flick

THIS YEAR WILL—finally—be the year of videoconferencing, according to Cahners In-Stat Group. The late-'90s trend for businesses to upgrade to 100Mbps Ethernet throughout their organization now provides the bandwidth necessary for desktop videoconferencing, says the research company. Furthermore, IT departments will use video as a means of justifying the initial infrastructure upgrade costs.

In-Stat notes that the initial use for video will be live conferences for product launches, earnings reports and speeches by top executives, but these live events will become archival footage that corporations will begin to use for video streaming purposes by the end of this year and into the next.

In-Stat backs up the claims by noting that videoconferencing product vendors, such as Polycom and Tandberg, are predicting significant sales growth during 2002, despite a general slowdown in the telecommunications industry. It also sees a bright future for other conferencing product vendors, including Forgent and the Sony Video Conferencing Group.

For more information, visit www.instat.com.

—Christopher Lindquist

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department. And to investors, it foreshadowed a massive consolidation across industry sectors as wireless, landline, ISP and cable companies all began offering one another's services.

In April 1994, we wrote a wide-ranging article ("E Pluribus Unum") covering all of those perspectives and endorsing the vision of unified messaging. The basic argument of our piece was that the bandwidth tide was relentless and without limit, and that quite soon—because radi-

come from their individual development. "If you're going to be a jack-of-all-trades, it's best not to become the master of none," he says. Would we have instant messaging today if unified messaging had triumphed five years ago? Perhaps not. In addition, huge user bases built around the individual technologies impose their own inertia.

Finally, the transition to unified messaging was not a small step to make. As a practical matter, integrating telephony with e-mail usually means replacing a per-

However, the qualitative case for UM (which has been renamed "unified communications" by the marketers to distance itself from the failed product lines of yesteryear) remains interesting. The steadily rising security standards and the huge increase in the number of messages both seem to cry out for a centralized management point. The rise of the application service provider model, which permits companies to buy just as much unification as they need for the staff that needs it the most, should make it easier to think about cost justification. The tide of bandwidth continues to flood in; it seems hard to doubt that sooner or later every type of message is going to be some twist of IP over Ethernet.

And on a deep level, the technology seems to want to be unified. While the infrastructures have stayed distinct, the functions themselves have begun to migrate across boundaries. E-mail, a store-and-forward technology, sprouted instant messaging and voice synthesis. Telephony, a real-time technology, developed voice mail. Voice mail has begun to acquire speech recognition, turning it back into another real-time medium. E-mail started carrying images. Wireless is borrowing features from every direction. Each of the communications technologies seems to be developing a unified messaging solution on its own terms.

This may well be the best possible outcome. Perhaps the fastest progress occurs not when companies marketing the same technologies compete but when different technologies do—when CRTs compete with flat LCD screens or tape drives with hard disks. As paradoxical as this might sound, it may well be that all the bandwidth and computational muscle flooding in on us will be best used for carrying not just one unified messaging solution but several. **CIO**

Fred Hapgood is a freelance technology writer based in Boston. He can be reached at hapgood@pobox.com.

As logical a step as unified messaging might seem, it wasn't easy to find a business case for it that was detailed, quantitative and convincing.

cal change was just the normal state of affairs—that tide would naturally gather all forms of communication to itself. CIOs were like white-water rafters trying to stay upright in a torrent plunging irresistibly and inevitably toward convergence. But could these CIOs stay afloat?

Part of the vision came true—the rise in LAN capacities and Internet connection speeds during the '90s was certainly dramatic. However, the big change in communications this decade turned out to be not unification but huge increases in the adoption rates of the component technologies: faxes, e-mail and wireless, which all grew by order of magnitude. By the late 1990s, 900 million voice mail messages were being exchanged and 300 million fax minutes consumed every year, says Tom Harper, executive director of Telemessaging Industry Association.

Ian Andrew Bell, a telecommunications consultant working in Vancouver, British Columbia, argues that CIOs understood that when they embraced unified messaging as the components were evolving rapidly they risked losing the gains that might

fectly functional and probably amortized PBX with a digital or "soft" PBX that can run off the local LAN. If an enterprise had several PBXes, thorny interoperability questions were bound to come up. Programmers would need to wire Web-based interfaces. Someone would need to persuade people to give up their fax machines. Training costs would be involved. The proliferation of input devices and new message types (such as video mail) kept raising the complexity bar.

As logical a step as unified messaging might seem, it wasn't easy to find a business case for it that was detailed, quantitative and convincing, not to mention sufficient enough to pay those costs. What is the value of time wasted collecting phone calls and e-mail over two connections? Printing out and faxing text from a dedicated machine? Or retrieving voice mail and responding to it (store-and-forward telephony), as opposed to having the voice mail processed by sophisticated notification algorithms with access to beepers or cell phones? The savings might be there, but they were hard to pin down.



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ROI Is DOA



Gary J. Beach

THE PAST 18 MONTHS have witnessed a fanatical focus on ROI. CIOs have sat in meeting after countless meeting where their executive colleagues ask, "What's the return on investment for this IT project?" The outcome of many of those meetings: The sales exec walks out with the millions previously slated for the IT department. Why? Because the senior vice president of sales can quantify results better than the CIO.

A fun part of my job is meeting with technology vendors who visit *CIO*. Three years ago every vendor preached "e" this and "e" that. Now it seems every slide in vendors' PowerPoint presentations promises ROI. This relentless industry focus on ROI means CIOs have lost sight of the big picture. Forget the forest; CIOs are focused only on the trees. No, make that the leaves!

If there were a Webster's dictionary of ROI, the phrases "long term" and "short term" would be synonyms. In ROI land, there is no true long term. And that could mean serious trouble for CIOs in the future.

Yes, there will be a recovery in IT spending. But there is a crescendo of articles espousing the thought that many busi-

nesses will not be ready for it. In the recovery, demand for IT products and services will outstrip the overly conservative IT budgets approved for 2002. Economists are notorious for missing the turns in the economy. The past year has been a rough one, but the upside is coming. CIOs who mindlessly follow the ROI dictates of their management will miss this turn because they have their eyes focused only on ROI speed bumps. Off the cliff they will fall at the turn!

"Businesses are not going to buy the framework of reducing costs [as the main reason for justifying IT expenditures] this year. Everyone is looking for stuff to deliver business value," says Carl Howe, principal analyst at Cambridge, Mass.-based Forrester Research.

I agree. Want to keep your job? Get off the ROI bandwagon. Author Geoffrey Moore says it best when he quips that the singular focus for CIOs should be on making business cases for how IT investments create or enhance shareholder value.

ROI is DOA. Long live the new king. Start making your business value pitches today.

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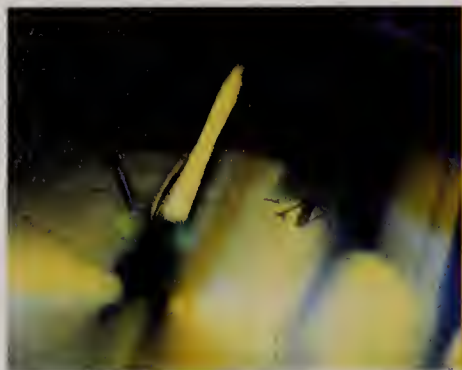
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SUNDAY, APRIL 14

8:00 am – 1:30 pm
Golf Tournament

3:00 pm – 5:00 pm
Registration

6:00 pm – 8:00 pm
Welcome Reception
Meet your peers, CIO editors, Corporate Hosts and speakers.

8:00 pm – 10:00 pm
A Night @ the Improv
Hosted by Information Builders, Inc.

MONDAY, APRIL 15

7:30 am – 8:30 am
Breakfast & Registration

8:30 am – 8:45 am
Welcome & KnowPulseSM Poll
ABBIE LUNDBERG
Editor in Chief, CIO Magazine

8:45 am – 9:30 am
Opening Keynote: Is There Such a Thing as Too Much Security?



JONATHAN ZITTRAIN, Conference Moderator
Executive Director, The Berkman Center for Internet & Society, Harvard Law School
The push toward a more secure Internet has been revitalized by recent events. Just what forms will that security take? Implications reach far beyond combating viruses and denial of service attacks. Almost every way we use the Internet, especially for commerce, stands to evolve, as “security” and “trust” become the touchstones of Internet development.

9:30 am – 10:15 am
CIO & CFO: Working Together for Better Results

NEIL HASTIE
CIO, TruServ Corporation
CORLISS (CORKY) J. NELSON
Senior Executive Vice President & CFO, Ryder System, Inc.



The CIO and the CFO are the two executives whose domains stretch to every corner of a company — as IT is woven through every aspect of the organization, and bottom-line concerns exert greater influence on all initiatives. Regardless of where they sit on the organization chart, the two will always have a unique relationship — one inevitably colored with tension. A CIO and CFO look at the nature of the roles, and discuss how to strike the right balance between an appropriate amount of tension and respect — and why doing so will produce better corporate results.

10:15 am – 11:00 am
Keeping Up with Emerging Technologies in Turbulent Times

CHARLES S. BRENNER
Senior Vice President, Fidelity Center for Applied Technology
The hardest part of a CIO's job is trying to keep up with emerging technologies. Companies must decide whether or not to invest in new technology development.



Fidelity Investments is one company that has continued to invest heavily in innovation.

Brenner explains why his company believes that an economic downturn is the ideal time to make investments in new technology: because by the time the markets rebound, it may be too late to develop the new technologies and services your customers demand before your competitors do. He also talks about some of the actual technology directions Fidelity is currently pursuing.

11:00 am – 11:30 am
Break

11:30 am – 12:15 pm
Business Briefings
Our Corporate Hosts present case studies, technology updates, and management practices.

12:15 pm – 1:45 pm
Working Lunch: The Economy — A Special Report
ROBERT J. SHILLER
Professor of Economics, Yale University



In his best-selling book, *Irrational Exuberance*, Shiller documented the combination of factors that drove stock markets to dizzying heights, and forecasted the dangers associated with that phenomenon. The dot.com bubble burst, the economy quickly slowed—and the events of September 11th continue to take a heavy toll psychologically and economically. Where do we go from here?

2:00 pm – 3:30 pm
Business Briefings

3:45 pm – 4:45 pm
CIO Panel: Rethinking IT and Business Strategies

Moderator: RICHARD W. SWANBORG, JR.
President and Founder, ICEX
Panelists:
JOHN GLASER
Vice President and CIO, Partners HealthCare System, Inc.
ED GLOTZBACH
Executive Vice President and CIO, SBC Communications Inc.



How do you keep your IT strategy relevant and visible while your business undergoes significant change? How do you improve the speed for setting an IT strategy and getting buy-in from all your stakeholders? Is there a better way to fund and quickly deploy a new strategic initiative while minimizing the risk of failure? Top CIOs share their views and experiences.

4:45 pm – 5:45 pm
Legal Liability: When You and Your Company Can Be Sued

BRUCE P. KELLER
Partner, Debevoise & Plimpton
To what extent are you and your company exposed based on how employees or third parties interact with your IT systems? Do you know what your systems are really hosting? A number of corporations recently discovered that their systems functioned as “super nodes” for the FastTrack file-swapping network. Keller examines how current concepts of organizational liability,



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privacy and intellectual property use in the marketplace affect corporations.

6:00 pm - 7:00 pm

Networking Reception

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TUESDAY, APRIL 16

7:30 am - 8:30 am

Breakfast & Informal Discussion Roundtables

Chat with *CIO* Magazine editors and your peers over coffee.

8:30 am - 8:45 am

Corporate IT Spending Trends — Where Are They Headed?

GARY BEACH

Group Publisher, CXO Media Inc. *CIO* Magazine, in partnership with Ed Yardeni, chief investment strategist of Deutsche Banc Alex.Brown, surveys a panel of senior executives on current and future IT spending. Beach presents an overview of the latest results and emerging trends.



8:45 am - 9:45 am

New Tools, New Approaches to E-Crime: A US Secret Service Briefing

BOB WEAVER

Assistant Special Agent in Charge, US Secret Service, NY Electronic Crimes Task Force. The Task Force's approach is unique in law enforcement because of its focus on prevention, education and partnership with private industry, as much as its responsi-



bilities for investigation and support of prosecution. Weaver, and Peter Cavicchia — one of the members of his New York team who is specially trained by the USSS to handle electronic crimes — provide specific practices and techniques used by the NY Electronic Crimes Task Force to combat electronic crimes, including forensics techniques, technology tools, and approaches the Task Force takes that are mutually productive for business as well as law enforcement.

This session is produced in cooperation with the National Critical Infrastructure Assurance Office (CIAO) in the US Department of Commerce.

9:45 am - 10:45 am

Best Practice Exchange: Setting, Selling and Managing the IT Budget

Moderator: MARTHA HELLER

Director, Best Practice Exchange, *CIO* Magazine

BRIAN BERTLIN

CIO, Washington Group

International

WILLIAM A. CROWELL

Former CIO, Meredith Corporation

JOHN NORDIN

Vice President & CIO

A. M. Castle & Co.

TIMOTHY WRIGHT

Senior Vice President, CIO & CTO

Terra Lycos

CIOs who want to see their projects completed and their staff intact understand the importance of smart budget practices. This



panel of CIOs, drawn from the *CIO* Best Practice Exchange, a private online network of senior IT executives, discusses the tools and techniques CIOs can use to set, sell, and manage their IT budgets.

10:45 am - 11:15 am

Break

11:15 am - 12:45 pm

Business Briefings

1:00 pm - 2:30 pm

Networking Lunch

2:45 pm - 3:30 pm

The Role of the CIO in a Changing Environment

A Special Interview with:

KEVIN TURNER

Executive Vice President & CIO, Wal-Mart Stores, Inc.

Turner shares his personal experiences and reflects on the role of today's CIOs in this interview with Editor in Chief Abbie Lundberg.



3:30 pm - 4:30 pm

Leadership and Communications

DR. RICK BRINKMAN

Author, *Dealing With People You Can't Stand...*

As CIOs gain more prominence within their organizations, they have more opportunities to interact with other senior executives, corporate officers and directors. Dr. Rick helps us understand the cause/effect of communications and get the results we want.



4:30 pm - 5:30 pm

Closing Keynote X-Engineering: The Next Frontier

JAMES A. CHAMPY

Author, *X-Engineering the Corporation, Reinventing Your Business for the Digital Age*. James A. Champy's radical rethinking of the corporation shows it not simply as a single collection of processes turning out goods and services, but rather as part of a web of interacting processes that include those of every organization involved in producing what the company sells. His new book, *X-Engineering the Corporation*, comes at a time when managers must look beyond reengineering and cross ("x") boundaries they've never crossed before. The way to thrive defies all previous models; it's the next frontier for dramatic business performance improvement.



5:30 pm - 5:45 pm

Summary/Conclusions

JONATHAN ZITTRAIN

5:45 pm - 7:00 pm

Keynote Reception

7:30 pm - 9:00 pm

CIO Dinner Under the Stars



Strategies for the New Reality



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EXECUTIVE Summaries

April 1, 2002

COVER STORY General Motors' E-Business Gamble

By Derek Slater | 50

E-business leadership is on GM CEO Rick Wagoner's list of the company's top four strategic priorities. But can e-business make a difference for an old-economy, big and slow manufacturer the way it can for nimble, information-based businesses? GM sure is trying: It has a plethora of e-business initiatives with three key constituencies—consumers, dealers and suppliers—intended to drive costs and time out of the value chain from vehicle design to post-sale care, while boosting quality and demand. GM has steered its e-projects with a “launch and learn” philosophy. The company takes acceptable risk, runs pilots, learns and pulls the plug when necessary. It keeps up with, and to some extent controls, the technology through its equity stakes in 38 Internet-based and software businesses. So far, e-business—particularly collaborative design programs, combined with process reengineering—has chipped away new vehicle launch time, reducing the average of three years down to 18 months.

“In e-business we'd like to be right every time, but that would be slow and expensive. So our philosophy has been let's get out, take on projects and trials in different places around the world, and see what works.”

—GM CEO RICK WAGONER

Web Services

By Susannah Patton | 58

THIS MAJOR NEW TREND in standards-based software technology is made up of pieces of custom-developed code that let two or more Web-based applications talk to each other. The “services” could be a piece of data or a business process. Web services' promise is to enable organizations to integrate and reuse software already built, and reduce the hassle and expense of systems integration. Web services holds a flexibility advantage over EDI and can be much cheaper than EAI packages. The big caveats—as yet unsolved—are security and reliability. Consequently, most companies' Web services projects are being kept behind firewalls. Three early adopters are profiled here, including Nordstrom. The retailer uses Web services to integrate its website and call center with its main-frame-based inventory data and gift-certificate information stored at its subsidiary.

Case Files: Honeywell Aerospace CRM

By Meridith Levinson | 64

IN THE MID-1990s, AlliedSignal Aerospace (now a Honeywell International division) had four business units with no way to share information about sales opportunities, the status of maintenance requests or the products customers had on their aircraft. Large customers sometimes had as many as 50 points of contact with the company. To stop antagonizing customers, the company implemented Atlas, a sales-force automation (SFA) tool from Siebel. But few salespeople wanted to use it, having seen two past SFA efforts fail and feeling loyal to their own databases. To handle resistance, Honeywell created the manager of CRM business processes position to work with each sales unit to fashion a new, single sales process tied into Atlas. The team overcame legacy loyalty by transferring data from existing databases into Atlas and then shutting down salespeople's old databases. Now the system is widely used, and Atlas-enabled efficiency is partly credited with doubling after-market sales.

Offshore Outsourcing Brokers

By Tom Field | 70

IN THE PAST COUPLE OF YEARS, offshore outsourcing brokers have emerged to negotiate, manage and even take financial responsibility for outsourcing projects sent to low-cost outposts. Brokers provide value because of their experience in selecting and managing offshore vendors, and acting as a mediator and legal resource. They also serve as a buffer between companies in volatile parts of the world and skittish post-9/11 U.S. executives. In return for their services, brokers expect a cut—up to half of the savings CIOs reap by going offshore. Despite the risks from a broker's viability (many of them are startups) and the fact that middlemen could further garble communication between vendor and customer, the broker option makes sense for small and midsize companies either new to outsourcing or only looking to send off small projects. Even larger companies going offshore for the first time can benefit from the accountability brokers provide. But for the big, experienced players, the concept of a middleman is not compelling.

IS Organization Dysfunction

By Stephanie Overby | 78

I.S. DEPARTMENT EMPLOYEES were at each other's throats at Millennium Teleservices, a telemarketing service provider. Productivity collapsed as employees spent their time trading vicious e-mails. The managing partner tried everything to quell the hostilities—from management training to group outings to ball games. Finally, in desperation, he turned to Dr. Christine Truhe, an organizational psychologist. Truhe launched a yearlong intervention to root out the cause of the dysfunction affecting the 113-person IT department and found the culprit in the fractured lines of authority between the company boss, the CIO and eight senior managers. Two years later, Millennium is healthy and thriving again.

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